Geol Survey

ILLINOIS MINERAL INDUSTRY IN 1979/1980 and review of preliminary mineral production data for 1981

Irma Samson

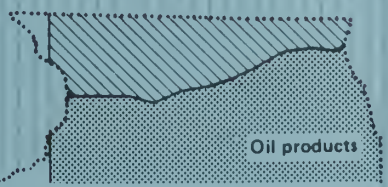

Figure 2. Total major energy used in Illi
1979. Hydropower and early nuclear p
too small to show.

FUELS

Coal

Production. In both 1979 and 19
fifth (behind Kentucky, West Virg
Wyoming) among the nation's coal
1979 Illinois producers mined a to
of coal, valued at $1,354.5 million
valued at $1,626.1 million. T
nt increase in production fro
year due to the strike) and
m 1979 to 1980. The total v
increased 37.5 percent
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to $26.00 per t
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March 1983
Illinois Mineral Notes 86
Illinois Department of Energy and Natural Resources
STATE GEOLOGICAL SURVEY DIVISION

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ILLINOIS MINERAL INDUSTRY IN 1979/1980 and review of preliminary mineral production data for 1981

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FIGURES

TABLES

ABSTRACT

The output and value of minerals mined and processed, and mineral products manufactured but not necessarily mined in Illinois are summarized in this annual report for 1979 and 1980. In 1979 the total value of production in all three categories was $3,812.0 million; in 1980, $3,991.3 million. The total value of mineral materials mined in 1980 was $2,775.2 million, with mineral fuels–coal, crude oil, and natural gas–contributing 88.2 percent of the total value. Processed mineral materials were valued at $909.1 million, and mineral products manufactured totaled $307.1 million in 1980. Coal continued to be the leading commodity in terms of value; oil ranked second; stone and sand and gravel, used largely for construction, ranked third and fourth; fluorspar was fifth. In 1980 Illinois remained the leading U.S. producer of fluorspar and tripoli, regained the lead in industrial sand, and ranked fourth in stone, peat and fuller's earth.

Preliminary data indicate that the value of minerals mined in 1981 was $2,545.6 million, a decrease from the all time high of $2,775.2 million in 1980.

Detailed production summaries and analyses–including maps, tables, and graphs–are given for all mineral commodities. The 1979 and 1980 figures are used if available.

AN OVERVIEW

The mineral industry of Illinois includes three types of operations: the removal of mineral materials from the ground by mining or other means of extraction, the processing of crude mineral materials (mined primarily outside Illinois) into basic industrial raw materials, and the manufacture of mineral products such as coke, lime, and cement from mineral materials extracted and processed primarily in Illinois (fig. 1). Table 1 gives current data on the production and value of commodities in all three categories from 1978 through 1980.

The total value of products from the three types of operations was $3,991.3 million in 1980, an increase of 4.7 percent over 1979. The true value is actually higher than this figure indicates, since the figure does not include the values of some commodities for which specific information is unavailable (indicated on table 1 by the symbol "NA"). Table 2 gives 1979 and 1980 data on Illinois mineral production and its percentage of the total national output.

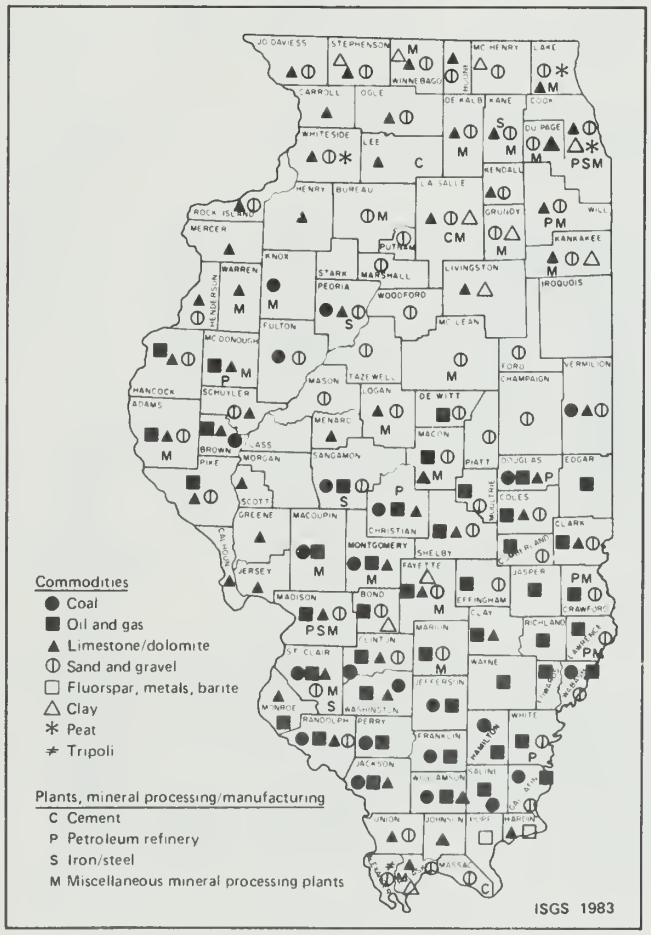

Figure 1. Illinois mineral production and mineral processing plants

TABLE 1. Production and value of mineral materials mined and/or processed and mineral products manufactured, 1978-1980

Commodity	Unit	1980 Quantity	1980 Value ($1000)	1980 Average unit value ($)	1979 Quantity	1979 Value ($1000)	1979 Average unit value ($)	1978 Quantity	1978 Value ($1000)	1978 Average unit value ($)
MINERAL MATERIALS MINED										
FUELS										
Coal	thousand tons	62,542	$1,626,103[c]	$ 26.00[c]	59,538	$1,354,492	$ 22.75	48,744	$ 997,305	$ 20.46
Crude oil	thousand bbl	22,702	817,265[c]	36.00[c]	21,793	511,912[c]	23.49[c]	23,362	322,394	13.80
Natural gas	thousand Mcf	1,574	2,991[c]	1.90[c]	1,585	2,949[c]	1.86[c]	1,159	1,495	1.29
Natural gas liquids	million bbl	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL[a]			$2,446,359			$1,869,353			$1,321,194	
INDUSTRIAL AND CONSTRUCTION MATERIALS										
Clays - Common	thousand tons	459[b]	1,919	3.90	542[b]	2,355[b]	4.08	699	2,750	3.93
Refractory	thousand tons	b	b	10.34	b	b	9.40	43	435	10.17
Absorbent	thousand tons	W	W	47.61	W	W	52.27	W	W	48.68
Fluorspar (shipments)	tons	W	W	139.52	W	W	113.05	115,859	12,452	107.48
Sand and gravel										
Common	thousand tons	27,094	78,510	2.90	40,033	87,016	2.17	37,657	83,676	2.22
Industrial	thousand tons	4,631	43,822	9.46	5,416	47,174	8.71	5,790	44,238	7.64
Stone (limestone & dolomite)										
Crushed and broken	thousand tons	53,309	180,656	3.39	63,551	188,130	2.96	62,453	160,353	2.57
Dimension	tons	2,238	103	46.16	3,000	128	42.67	2,600	122	40.67
Tripoli	thousand tons	W	W	W	W	W	W	W	W	W
TOTAL[a]			$ 305,010			$ 324,803			$ 304,026	
METALS										
Lead	metric tons	W	W	W	W	W	W	W	W	W
Zinc	metric tons	W	W	W	W	W	W	W	W	W
Silver	troy ounces	W	W	W	W	W	W	W	W	W
Germanium		NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL[a]			W			W			W	
OTHERS										
Peat	thousand tons	79	1,505	19.05	86	1,610	18.72	84	1,594	18.86
Gem stones		NA	15	-	NA	15	-	NA	15	-
Barite, primary	thousand tons	W	W	W	W	W	W	W	W	W
TOTAL[a]			$ 1,520			$ 1,625			$ 1,609	
Values that cannot be disclosed (W)			22,283			24,320			10,201	
Total value of mineral materials mined[a]			$2,775,172			$2,220,101			$1,637,030	
MINERAL MATERIALS PROCESSED										
Natural gas liquids	thousand bbl	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perlite, expanded	short tons	51,502	8,506	165.16	64,813	11,601	179.00	W	W	W
Barite, ground	short tons	W	W	W	W	W	W	W	W	W
Gypsum, calcined	short tons	W	W	W	W	W	W	W	W	W
Vermiculite, exfoliated	short tons	W	W	W	W	W	W	W	W	W
Iron oxide pigments	short tons	36,267	28,843	657.43	41,414	22,353	539.75	32,884	19,131	581.77
Bismuth		NA	NA	NA	NA	NA	NA	NA	NA	NA
Primary slab zinc	tons	NA	NA	NA	58,315	NA	NA	55,277	NA	NA
Secondary slab zinc		NA	NA	NA	NA	NA	NA	NA	NA	NA
Columbium & tantalum		NA	NA	NA	NA	NA	NA	NA	NA	NA
Iodine, crude	pounds	W	NA	NA	W	NA	NA	W	W	W
Pig iron	thousand tons	4,376	849,308	194.08	6,163	1,203,768	194.62	6,925	1,157,091	167.27
Sulfur	thousand tons	208	12,507	60.13	196	8,269	42.23	202	7,867	38.95
Slag (iron & steel)	thousand tons	1,100	3,200	2.91	W	W	W	NA	NA	NA
TOTAL[a]			897,364			1,245,991			1,184,089	
Values that cannot be disclosed (W)			11,691			15,690			22,813	
Total value of mineral materials processed[a]			909,055			$1,261,680			$1,249,507	
MINERAL PRODUCTS MANUFACTURED										
Cement (shipments)										
Portland	thousand tons	1,649	75,315	45.67	1,889	79,604	42.14	2,112	80,242	37.99
Masonry	thousand tons	W	W	W	W	W	W	W	W	W
Clay products, estimated		-	65,601	-	-	59,852	-	-	46,410	-
Lime	thousand tons	W	W	W	W	W	W	W	W	W
Coke	thousand tons	1,155	W	W	1,364	W	W	1,431	153,203	107.06
Glass	thousand tons	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 1. *continued*

Commodity	Unit	1980 Quantity	1980 Value ($1000)	1980 Average unit value ($)	1979 Quantity	1979 Value ($1000)	1979 Average unit value ($)	1978 Quantity	1978 Value ($1000)	1978 Average unit value ($)
TOTAL[a]			$ 140,916			$ 139,456			$ 279,855	
Values that csnnot be disclosed (W)			166,203			190,763			46,921	
Totsl value of mineral products manufactured[a]			$ 307,119			$ 330,219			$ 326,776	
STATE TOTAL[a]			$3,991,346			$3,812,000			$3,170,708	

[a] Data may not add up to totsls shown because of independent rounding.
[b] Refractory clay is included with common clay to avoid disclosing confidential data from individual companies.
[c] Estimated.
NA = not available.
W = withheld to avoid disclosing confidential data from individual companies.

Source: U.S. Bureau of Mines, Illinois Department of Mines and Minerals, Illinois State Geological Survey.

TABLE 2. Illinois mineral production, its value and percentage of United States mineral production, 1979 and 1980

Commodity	Unit	1979 Illinois Quantity	1979 Illinois Value ($1000)	1979 United States Quantity	1979 United States Value ($1000)	1979 Illinois percentage of United States Quantity	1979 Illinois percentage of Production Value
Fluorspar shipments	thousand tons	W	W	109	12,162	--	--
Peat, commercial sales	thousand tons	86	1,610	798	15,517	10.78	10.38
Coal	thousand tons	59,538	1,354,492	777,859	18,474,151	7.65	7.33
Pig iron	thousand tons	6,162	1,203,768	86,975	17,655,925	7.08	6.82
Stone	thousand tons	66,551	188,130	1,097,600	3,388,100	6.06	5.55
Sand and gravel	thousand tons	45,448	134,190	979,000	2,427,000	4.64	5.53
Coke	thousand tons	1,364	W	52,943	5,458,568	2.58	W
Clays[a]	thousand tons	542	2,355	54,689	846,089	0.99	0.28
Zinc	thousand tons	W	W	267	219,841	--	--
Cement shipments(portland)	thousand tons	1,889	79,604	83,390	3,856,345	2.27	2.06
Crude oil	thousand tons	21,793	435,855	3,121,310	39,047,588	0.70	7.99
Lead	thousand tons	W	W	526	609,929	--	--
Natural gas liquids	thousand bbl	NA	NA	572,086	NA	--	--
Natural gas	million cu ft	1,585	2,949	20,471,260	24,113,634	0.01	0.01
Lime	thousand tons	W	W	20.945	862,459	--	--

Commodity	Unit	1980 Illinois Quantity	1980 Illinois Value ($1000)	1980 United States Quantity	1980 United States Value ($1000)	1980 Illinois percentage of United States Quantity	1980 Illinois percentage of Production Value
Fluorspar shipments	thousand tons	W	W	93	12,611	--	--
Peat	thousand tons	79	1,505	788	16,190	10.03	9.30
Coal	thousand tons	62,542	1,626,103	829,700	NA	7.54	--
Pig iron	thousand tons	4,376	849,308	68,699	13,945,897	6.37	6.09
Stone	thousand tons	55,547	180,759	981,600	3,393,500	5.66	5.33
Sand and gravel	thousand tons	31,725	122,332	794,400	2,302,000	3.99	5.31
Coke	thousand tons	1,155	W	46,132	NA	2.50	--
Clays[a]	thousand tons	459	1,919	48,790	898,947	0.94	0.21
Zinc	thousand tons	W	W	335	276,325	--	--
Cement shipments(portland)	thousand tons	1,649	75,315	74,674	3,799,923	2.21	1.98
Natural gas liquids	thousand bbl	NA	NA	NA	NA	--	--
Natural gas	million cu ft	1,574	2,991	19,883,729	NA	0.01	--
Lime	thousand tons	W	W	19,010	842,922	--	--

[a]Excluding fuller's earth

NA = not available
W = withheld to avoid disclosing confidential data from individusl companies

Source: U.S. Bureau of Mines, Illinois State Geological Survey, Illinois Department of Mines and Minerals, and American Petroleum Institute.

MINERAL MATERIALS MINED

In 1980 the value of commodities mined in Illinois was $2,775.2 million, a 25.0 percent increase over the record high of $2,220.1 million in 1979 (table 1). The mineral fuels—coal, crude oil, and natural gas—accounted for 88.2 percent of the 1980 total; the industrial and construction materials—clays, fluorspar, sand and gravel, stone, and tripoli—accounted for 11.7 percent; the metals—lead, zinc, and silver, along with other minerals such as peat, barite, and gemstones—made up the remaining 0.1 percent.

Ninety-eight of the 102 counties in Illinois reported extraction of mineral materials (table 3). Perry County ranked first in terms of production value, producing coal and crude oil at a total value of $233.9 million, 10.5 percent of the state total. Randolph County ranked second with a total value of $190.3 million from coal, stone, crude oil, sand and gravel, and natural gas.

TABLE 3. Value of mineral materials mined and/or processed and mineral products manufactured in Illinois, by county, 1979

County	Approximate[a] rank based on total value	Mineral materials mined, in order of value	Value ($1000)	Mineral materials processed, in order of value	Value ($1000)	Mineral products manufactured, in order of value	Value ($1000)	Total value ($1000)
Adams	43	Stone; sand; crude oil	W	Iron oxide pigments	W	—	—	W
Alexander	57	Tripoli, sand & gravel	W	—	—	—	—	W
Bond	68	Crude oil, sand, clay, natural gas	2,628	—	—	—	—	2,628
Boone	84	Stone, sand & gravel	W	—	—	—	—	W
Brown	89	Stone, coal, crude oil, clay	597	—	—	—	—	597
Bureau	78	Sand & gravel	1,269	—	—	Clay products	W	W
Calhoun	96	Stone	45	—	—	—	—	45
Carroll	83	Stone	1,064	—	—	—	—	1,064
Cass	99	—	—	—	—	—	—	
Champaign	74	Sand & gravel	1,563	—	—	—	—	1,563
Christian	31	Coal, crude oil, stone	19,687	—	—	—	—	19,687
Clark	59	Stone, sand & gravel crude oil[b]	W	—	—	—	—	W
Clay	30	Crude oil, stone	21,596	—	—	—	—	21,596
Clinton	21	Coal, crude oil, stone, sand & gravel	W	—	—	—	—	W
Coles	52	Crude oil, stone, nat. gas, sand & gravel	W	—	—	—	—	W
Cook	5	Stone, sand & gravel, clay, peat	54,228	Expanded perlite, sulfur, slag, pig iron[c], secondary slab zinc[d], bismuth[d]	W	Lime, clay products, coke[c]	W	109,097
Crawford	25	Crude oil, sand & gravel	W	Sulfur	W	—	—	W
Cumberland	46	Crude oil[b], sand & gravel	8,151	—	—	—	—	8,151
De Kalb	69	Stone, sand & gravel	W	Exfoliated vermiculite, expanded perlite	1,035	—	—	W
De Witt	70	Crude oil, sand & gravel	2,386	—	—	—	—	2,386
Douglas	16	Coal, stone, crude oil	W	Natural gas liquids[d]	—	—	—	W
Du Page	39	Sand & gravel, stone	4,489	Exfoliated vermiculite	W	Clay products, glass[d]	W	W
Edgar	72	Crude oil, natural gas	2,182	—	—	—	—	2,182
Edwards	42	Crude oil	10,233	—	—	—	—	10,233
Effingham	53	Crude oil, natural gas, sand	W	—	—	—	—	W
Fayette	20	Crude oil, stone, sand & gravel, nat.gas, clay	W	Sulfur	W	—	—	W
Ford	85	Sand & gravel	940	—	—	—	—	940
Franklin	3	Coal, crude oil	133,611	—	—	—	—	133,611
Fulton	14	Coal, sand & gravel	W	—	—	—	—	W
Gallatin	22	Coal, crude oil, sand & gravel, natural gas	W	—	—	—	—	W
Greene	86	Stone	W	—	—	—	—	W
Grundy	45	Sand, clay	W	—	—	Clay products	W	9,355
Hamilton	41	Crude oil, coal	10,793	—	—	—	—	10,793
Hancock	82	Stone, sand & gravel crude oil	W	—	—	—	—	W
Hardin	29	Fluorspar, stone, zinc, primary barite, lead, silver, gemstones, germanium[d]	W	Ground & crushed barite	W	—	—	W
Henderson	80	Stone, sand	W	—	—	—	—	W
Henry	77	Stone	1,449	—	—	—	—	1,449
Iroquois	100	—	—	—	—	—	—	—
Jackson	18	Coal, stone, crude oil	W	—	—	—	—	W
Jasper	40	Crude oil	12,297	—	—	—	—	12,297
Jefferson	4	Coal, crude oil	125,435	—	—	—	—	125,435
Jersey	90	Stone	333	—	—	—	—	333
Jo Daviess	79	Stone, sand & gravel	W	—	—	—	—	W
Johnson	64	Stone	2,990	—	—	—	—	2,990
Kane	28	Sand & gravel, stone[e]	16,705	Iron oxide pigments	W	Clay products	W	W
Kankakee	55	Stone, clay, sand	W	Sulfur	W	—	—	W
Kendall	75	Stone, sand & gravel	W	—	—	—	—	W
Knox	34	Coal	18,411	—	—	Clay products	W	W
Lake	33	Sand & gravel, stone, peat	W	Calcined gypsum, expanded perlite, crude iodine[d], columbium[d]	W	Clay products	W	19,146
La Salle	9	Sand & gravel, stone, clay	50,586	—	—	Portland cement, clay products, glass[d]	W	W
Lawrence	17	Crude oil, sand & gravel	W	Sulfur	W	—	—	W
Lee	27	Stone	3,208	—	—	Portland cement, masonry cement	W	W
Livingston	47	Stone, clay	7,714	—	—	—	—	7,714
Logan	73	Stone, sand & gravel	W	—	—	Glass[d]	—	W
McDonough	54	Crude oil, stone	W	—	—	Clay products	—	W
McHenry	32	Sand & gravel, clay	19,320	—	—	—	—	19,320

TABLE 3. *continued*

County	Approximate[a] rank based on total value	Mineral materials mined, in order of value	Value ($1000)	Mineral materials processed, in order of value	Value ($1000)	Mineral products manufactured, in order of value	Value ($1000)	Total value ($1000)
McLean	65	Sand & gravel	2,918	—	—	Fiberglass[d]	—	2,918
Macon	58	Sand & gravel, crude oil, stone	3,806	—	—	Glass[d]	—	3,806
Macoupin	6	Coal, crude oil	93,519	Exfoliated vermiculite	W	—	—	W
Madison	38	Stone, crude oil, sand	7,017	Sulfur, slag, pig iron[c]	W	Clay products, coke[c], glass[d]	W	15,312
Marion	19	Crude oil, sand	W	Secondary slab zinc[d]	—	Glass[d]	—	W
Marshall	87	Sand & gravel	W	—	—	—	—	W
Mason	97	Sand	28	—	—	—	—	28
Massac	23	Gravel	W	—	—	Portland cement	35,800	W
Menard	63	Stone	W	—	—	—	—	W
Mercer	92	Stone	236	—	—	—	—	236
Monroe	71	Stone, crude oil	W	—	—	—	—	W
Montgomery	7	Coal, stone, crude oil	85,293	—	—	Glass[d]	—	85,293
Morgan	101	—	—	—	—	—	—	—
Moultrie	95	Crude oil, sand & gravel	W	—	—	—	—	W
Ogle	49	Sand, stone	W	—	—	—	—	W
Peoria	37	Coal, sand & gravel, stone	15,868	Slag	W	—	—	W
Perry	1	Coal, crude oil	233,875	—	—	—	—	233,875
Piatt	91	Sand & gravel	319	—	—	—	—	319
Pike	67	Stone, natural gas, sand & gravel	W	—	—	—	—	W
Pope	98	Fluorspar[f], lead[f], zinc[f], silver[f]	—	—	—	—	—	—
Pulaski	44	Clay, stone, sand & gravel	W	—	—	Clay products	W	10,118
Putnam	93	Sand & gravel	W	—	—	—	—	W
Randolph	2	Coal, stone, crude oil sand & gravel, nat.gas	190,329	—	—	—	—	190,329
Richland	35	Crude oil	17,564	—	—	—	—	17,564
Rock Island	90	Stone, sand & gravel	W	—	—	—	—	W
St. Clair	8	Coal, stone, crude oil, natural gas, sand & gravel	W	Iron oxide pigments, ground barite, primary slab zinc[d]	W	Glass[d]	—	81,308
Saline	12	Coal, crude oil, nat.gas	67,296	—	—	—	—	67,296
Sangamon	26	Coal, crude oil, sand & gravel	28,054	Iron oxide pigments	W	—	—	W
Schuyler	94	Sand & gravel, stone	W	—	—	—	—	W
Scott	88	Stone	W	—	—	—	—	W
Shelby	76	Crude oil, sand & gravel, stone	W	—	—	—	—	W
Stark	102	—	—	—	—	—	—	—
Stephenson	81	Stone, sand & gravel, clay	W	—	—	—	—	W
Tazewell	62	Sand & gravel	3,105	—	—	—	—	3,105
Union	56	Stone, sand	W	—	—	—	—	W
Vermilion	48	Stone, coal, sand & gravel	W	—	—	—	—	W
Wabash	15	Coal, crude oil, sand & gravel	62,949	—	—	—	—	62,949
Warren	51	Stone	3,122	—	—	Clay products	W	W
Washington	36	Crude oil, coal, stone	W	—	—	—	—	W
Wayne	11	Crude oil, nat. gas	70,502	—	—	—	—	70,502
White	12	Crude oil, sand & gravel	W	—	—	—	—	W
Whiteside	66	Peat, stone, sand & gravel	2,861	—	—	—	—	2,861
Will	24	Stone, sand & gravel	21,976	Expanded perlite, sulfur, crude iodine[d]	W	Glass[d]	—	W
Williamson	13	Coal, crude oil, stone	65,806	—	—	—	—	65,806
Winnebago	60	Stone, sand & gravel	3,379	—	—	Clay products	W	W
Woodford	61	Sand & gravel	3,573	—	—	—	—	3,573
Undistributed		Crude oil, stone	7,701	Pig iron	1,203,768	Coke	W	W
Values that cannot be disclosed (W)			695,094		56,877		294,419	2,372,189
Total[g]			2,220,101		1,261,680		330,219	3,812,000

[a]Since some values are not available by county, county ranking cannot be exact.
[b]Clark Co. crude oil value included with Cumberland Co.
[c]Pig iron and coke not available by county.
[d]Value unknown. Not included in total.
[e]Including dimension stone.
[f]Pope Co. fluorspar and metal values included in Hardin Co.
[g]Data may not add up to totals shown because figures have been rounded.

W = withheld to avoid disclosing confidential data from individual companies.
Source: U.S. Bureau of Mines, Illinois Department of Mines and Minerals, and Illinois State Geological Survey.

MINERAL MATERIALS PROCESSED

In 1979 seventeen Illinois counties processed raw mineral material, which came primarily from other states (table 3). Pig iron, natural gas liquids, expanded perlite, sulfur, ground barite, calcined gypsum, exfoliated vermiculite, iron oxide pigments, crude iodine, bismuth columbium, tantalum, and primary and secondary slab zinc are processed at a total of $1,257.2 million. Pig iron produced in Cook and Madison Counties accounted for 95.8 percent of this total.

In 1979 Illinois maintained its lead in production and value of expanded perlite and ranked among the top producers in output of iron oxide pigments.

Perlite production decreased 20.5 percent in 1980. Ground barite increased 3.9 percent for the 1979 production; gypsum decreased 39.5 percent; vermiculite decreased 18.1 percent; iron oxide pigments decreased 12.4 percent pig iron decreased 29 percent; and sulfur increased 6.1 percent.

MINERAL PRODUCTS MANUFACTURED

The mineral products manufactured in Illinois (primarily from materials mined within the state) included coke, clay products, cement, lime, and glass. The value of these products was $330.2 million plus in 1979 and $307.1 million plus in 1980, an increase of 1.1 percent over the $326.8 million in 1978 and a 7.0 percent decrease from 1979 to 1980 (table 1). In 1979 coke accounted for the larger percentage of the total value with cement second and clay products third. No figures are available for the value of glass manufactured in the state.

In 1980 portland cement production decreased from 1,889,000 tons to 1,649,000 tons; masonry cement decreased almost 80 percent. The value of clay products is estimated to be around $65.6 million, up 9.6 percent from 1979. Lime production declined 13.5 percent; coke production, more than 15 percent.

EMPLOYMENT AND WAGES

According to the Illinois Department of Labor, in 1980 179,900 persons were employed by the Illinois mineral industry, compared to 195,700 persons in 1979. This represents an 8 percent decrease. Mining, quarrying, and oil and gas extraction accounted for 31,300 persons, a 3 percent increase from 1979; mineral processing for 102,900, an 11 percent decrease from the previous year; and manufacturing mineral products for 45,700, a decrease of 8 percent from 1979 (table 4).

In the Illinois mineral industry for 1980 the average weekly earning of workers was $421.21, an increase of 8.2 percent from 1979.

TRANSPORTATION OF MINERAL MATERIALS

In Illinois the shipment of mineral materials forms a considerable part of the transportation industry. In 1979 about 98 million tons of sand and gravel, stone, and coal were shipped by truck. Crushed stone accounted for approximately 58 percent of this tonnage, and sand and gravel for about 39 percent. In 1980 about 89 million tons (about 56 percent crushed stone and 34 percent

TABLE 4. Number of employees and average weekly earnings, hours worked, and hourly wages in Illinois Mineral Industry, 1979 and 1980

	1980				1979			
Class of employment	No. of employees (x 1000)	Average weekly earnings ($)	Average no. of hours worked/week	Average hourly earnings ($)	No. of employees (x 1000)	Average weekly earnings ($)	Average no. of hours worked/week	Average hourly earnings ($)
Mining	31.3	421.21	40.9	10.30	30.4	389.16	42.4	9.18
Bituminous coal	18.3	455.01	39.8	11.42	18.3	398.02	40.5	9.82
Oil and gas extraction	6.6	381.79	42.1	9.06	5.3	340.48	41.1	8.29
Other	6.3	352.03	43.2	8.15	6.7	391.36	48.9	8.00
Mineral processing								
Primary metal industries	89.8	400.54	40.4	9.91	99.4	367.47	41.9	8.77
Petroleum and coal products	13.1	429.83	39.8	10.80	16.1	423.83	43.3	9.79
Mineral product manufacturing								
Glass and glass products	9.7	340.14	41.4	8.22	11.6	290.04	38.6	7.52
Cement and clay products	3.8	293.66	41.5	7.08	3.9	295.97	42.6	6.94
Stone and other mineral products	32.2	330.68	40.9	8.09	34.3	304.46	40.9	7.44

Source: Illinois Department of Labor, Bureau of Employment Security

sand and gravel) were shipped by truck. In 1979 more than 49 million tons, and in 1980 about 54 million tons, were shipped by rail. In both years coal comprised more than 90 percent of the tonnage. Other materials, such as pig iron, fluorspar, coke, and clay products, were shipped by railroad, truck, and barge. Crude oil and natural gas were transported by pipeline, and minor amounts of coal were moved to mine-mouth generating plants by conveyor belt in Christian and Montgomery Counties.

MINERAL AND ENERGY CONSUMPTION

As a leading manufacturing state, Illinois consumes a large variety of mineral materials each year. Table 5 gives the data for some of the mineral materials used in Illinois during 1979 and 1980.

On the average, Illinois consumption of mineral commodities is about 5.9 percent of the total in the nation, approximately proportionate to Illinois' share of the total population of the United States.

In 1979 Illinois consumed an estimated 3,674.1 trillion Btu of energy, or 4.7 percent of the total energy consumed in the United States (table 6). Most of this (92 percent) came from fossil fuels.

Figure 2 shows the trends in total energy used in Illinois. In 1979 Illinois energy usage decreased slightly (2.2%) from 1978, although the overall consumption has been increasing steadily. The use of coal as a source of energy has been declining; however, in 1979 it increased and accounted for 25.6 percent of Illinois energy usage, as compared to 22.6 percent in 1978. Oil products accounted for 34.9 percent; natural gas, 31.5 percent; and nuclear power, 8 percent of Illinois energy consumption.

INDIVIDUAL COMMODITIES

MINERAL MATERIALS MINED

The mineral materials mined in Illinois are categorized into four groups: fuels, industrial and construction materials, metals, and other materials.

TABLE 5. Selected mineral materials used in Illinois, 1979 and 1980

Commodity	Quantity unit	1980 United States	1980 Illinois	1980 Illinois percentage of U.S. consumption	1979 United States	1979 Illinois	1979 Illinois percentage of U.S. consumption
FUELS							
Coal	million tons	699.1	42.1	6.02	677.3	42.7	6.30
Coke	million tons	41.3	2.7	6.43	53.8	3.8	7.06
Distillate fuel oil	million bbl	1,049.0	36.8	3.51	1,208.5	49.3	4.08
Gasoline	million bbl	2,532.8	114.7	4.53	2,682.8	123.5	4.60
Kerosene	million bbl	58.0	0.6	1.05	68.6	0.9	1.34
Liquified petroleum gases and ethane	million bbl	442.9	32.0	7.22	450.6	40.7	9.04
Natural gas	trillion cu ft	19.9	1.1	5.48	20.2	1.1	5.65
Residual fuel oil	million bbl	918.0	28.4	3.09	1,031.6	27.7	2.69
METALS							
Pig iron	million tons	69.1	4.4	6.35	87.5	6.2	7.08
Lead	thousand tons	1,070.3	59.8	5.59	1,358.3	86.1	6.34
Zinc (slab)	thousand tons	811.1	123.3	15.21	1,000.6	138.9	13.89
CONSTRUCTION MATERIALS							
Air-cooled slag	million tons	17.1	W	--	25.0	W	--
Asphalt	million tons	32.1	1.8	5.52	37.8	2.3	6.16
Cement	million tons	79.1	2.8	3.48	88.7	3.5	3.95
Road oil	million tons	0.3	0.02	8.79	0.3	0.04	11.56
Sand and gravel	million tons	794.4	31.7	3.99	979.0	45.4	4.64
Stone	million tons	981.6	53.3	5.43	1,097.6	63.6	5.79
AGRICULTURAL & CHEMICAL MATERIALS							
Feldspar	thousand tons	710.0	36.6	5.15	744.0	43.7	5.87
Fluorspar	thousand tons	976.6	31.0	3.18	1,135.5	51.7	4.55
Lime[a]	thousand tons	18,965.0	893.0	4.71	20,940.0	1,068.0	5.10
Salt							
Evaporated	thousand tons	6,348.0	360.0	5.67	6,261.0	408.0	6.52
Rock	thousand tons	12,279.0	804.0	6.55	14,902.0	1,051.0	7.05

[a] Excludes regenerated lime.

Source: U. S. Bureau of Mines.

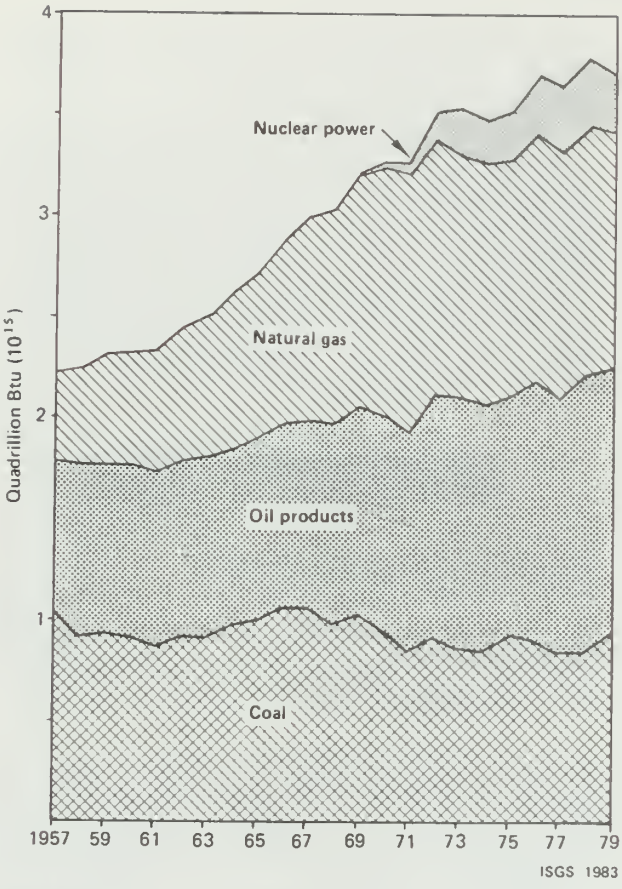

Figure 2. Total major energy used in Illinois from 1957 through 1979 (Hydropower and early nuclear power (1960-1969) were too small to show)

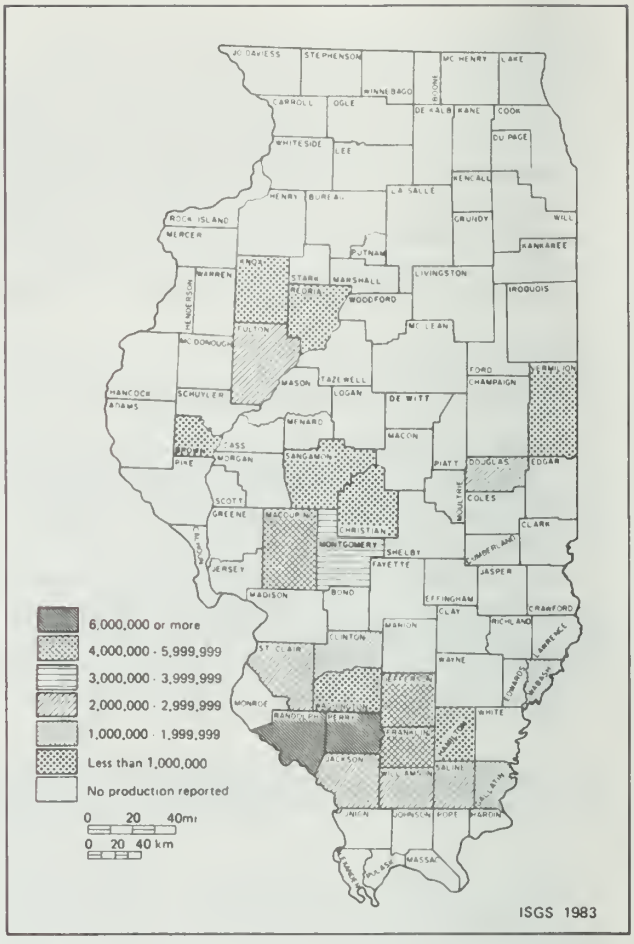

Figure 3. Illinois coal production, 1979

FUELS

Coal

Production. In both 1979 and 1980, Illinois ranked fifth (behind Kentucky, West Virginia, Pennsylvania, and Wyoming) among the nation's coal-producing states. In 1979 Illinois producers mined a total of 59.5 million tons of coal, valued at $1,354.5 million; in 1980, 62.5 million tons, valued at $1,626.1 million. This represents a 22.1 percent increase in production from 1978 (an extremely low year due to the strike) and an increase of 5 percent from 1979 to 1980. The total value of the production in 1979 increased 37.5 percent and in 1980, 20.1 percent. The average f.o.b. mine value of coal increased in 1979 from $22.75 to $26.00 per ton in 1980.

Coal production was reported by 23 counties in 1979 (fig. 3). In 1979 the ten leading counties–Perry, Randolph, Franklin, Jefferson, Macoupin, Montgomery, Williamson, Saline, Fulton, and Douglas–contributed 79.5 percent of the total production (table 7). Surface mines operated in 13 counties; in only five counties (Perry, Randolph, Fulton, Jackson, and Saline) were more than 2 million tons of coal mined by the surface method. Underground mines operated in 17 counties; but only in six (Franklin, Jefferson, Macoupin, Montgomery, Douglas, and Randolph) were more than 2 million tons mined by this method. In Perry County, the state's leading coal-producing county, all coal was surfaced-mined.

In 1980, 26 coal-mining companies operated in 23 counties in Illinois. The leading ten counties–Perry, Randolph, Franklin, Macoupin, Jefferson, Williamson, Montgomery, Saline, Fulton, and Douglas–contributed 79.2 percent of the total production (table 7). Surface mines were operated in 12 counties, with two counties (Perry and Randolph) contributing over 60 percent of the state's production. Underground mines operated in 17 counties, with the top three counties–Franklin, Macoupin, and Jefferson–contributing 42.9 percent of the production.

Since 1833 a total of 4,841.7 million tons of coal have been produced from Illinois coal mines (table 8). Of this total, 1,070.2 million tons (22.1 percent) have been surface mined since 1911.

More than 150 coal mines were operating in the early 1950s; however, that number has decreased greatly. In 1980, 66 mines operated in Illinois, compared to 71 in 1979. Of the 71 mines, 40 were surface and 31 under-

TABLE 6. Fuels and energy consumed in Illinois, 1978-1980

Fuel	Units	1980	1979	1978	Change from 1979-1980 (%)	Change from 1978-1979 (%)	Trillion Btu[a] 1980[b]	1979[c]	1978[d,e]
Coal	thousand tons	42,106	43,719	38,700	- 1.4	+10.4	926.3	948.4	856.8
Natural gas	million cu ft	1,089,720	1,142,732	1,174,934	- 4.6	- 2.7	1,118.1	1,166.7	1,197.3
Gasoline	thousand bbl	114,685	123,480	132,522	- 7.1	- 6.8	602.4	648.6	696.1
Kerosene	thousand bbl	606	920	1,841	-34.1	-50.0	3.4	5.2	10.4
Distillate fuel oil	thousand bbl	36,818	49,349	61,760	-25.4	-20.1	214.5	287.5	359.8
Residual fuel oil	thousand bbl	28,394	27,717	30,111	+ 2.4	- 8.0	178.5	174.3	189.3
Liquid petroleum gases	thousand bbl	31,964	40,747	39,467[e]	-21.6	+ 3.2	117.4	149.9	144.8
Hydropower	million kilowatt hr	138	130	129	+ 6.2	+ 0.8	1.4	1.3	1.3
Nuclear power	million kilowatt hr	27,742	27,463	32,926	+ 1.0	-16.6	295.2	292.2	350.3
TOTAL							3,457.2	3,674.1	3,806.1
Illinois percentage of United States total energy consumption							4.6	4.7	4.9
Percentage of total energy consumed in Illinois, by source:									
Coal							26.79	25.81	22.51
Natural gas							32.34	31.75	31.46
Oil products							32.29	34.45	36.79
Nuclear power							8.54	7.95	9.21
Hydropower							0.04	0.04	0.03
TOTAL							100.00	100.00	100.00

[a]Fuel conversion factors: gasoline—5,253,000 Btu/bbl: kerosene—5,670,000 Btu/bbl; distillate fuel oil—5,825,000 Btu/bbl; residual fuel oil—6,287,000 Btu/bbl; nuclear power—10,640 Btu/kwh; hydropower—10,335 Btu/kwh.
[b]Fuel conversion factors: coal—22,000,000 Btu/ton; natural gas—1,026 Btu/Mcf; LPG—3,674,000 Btu/bbl.
[c]Fuel conversion factors: coal—22,200,000 Btu/ton; natural gas—1,021 Btu/Mcf; LPG—3,680,000 Btu/bbl.
[d]Fuel conversion factors: Coal—22,140,000 Btu/ton; natural gas—1,019 Btu/Mcf; LPG—3,669,000 Btu/bbl.
[e]Revised.

TABLE 7. Illinois coal production, by county, 1979 and 1980

County	1980 Production[a] No. of mines	Underground (tons)	Surface (tons)	Total (tons)	Value[b]	1979 Production[a] No. of mines	Underground (tons)	Surface (tons)	Total (tons)	Value[b]
Brown	1	--	494	494	12,844	1	--	8,227	8,227	187,164
Christian	1[c]	672,090	--	672,090	17,474,340	1[c]	554,762	--	554,762	12,620,836
Clinton	1	2,089,261	--	2,089,261	54,320,786	1	1,297,744	--	1,297,744	29,523,676
Douglas	2	2,717,180	--	2,717,180	70,646,680	2	2,559,040	--	2,559,040	58,218,160
Franklin	5	6,097,778	--	6,097,778	158,542,228	5	5,465,632	--	5,465,632	124,343,128
Fulton	4	--	2,803,112	2,803,112	72,880,912	4	--	2,798,341	2,798,341	63,662,258
Gallatin	2	967,283	113,112	1,080,395	28,090,270	2	925,456	290,590	1,216,046	27,665,047
Hamilton	1	288,150	--	288,150	7,491,900	1	46,365	--	46,365	1,054,804
Jackson	1	--	2,215,188	2,215,188	57,594,888	2	--	2,260,177	2,260,177	51,419,027
Jefferson	3	4,371,946	--	4,371,946	113,670,596	4	4,726,593	85,286	4,811,879	109,470,247
Knox	1	--	269,743	269,743	7,013,318	1	--	809,283	809,283	18,411,188
Macoupin	2	4,543,519	--	4,543,519	118,131,494	2	4,104,505	--	4,104,505	93,377,489
Montgomery	1[c]	2,921,271	--	2,921,271	75,953,046	1[c]	3,507,931	--	3,507,931	79,805,430
Peoria	1	--	476,325	476,325	12,384,450	1	--	615,453	615,453	14,001,556
Perry	5	--	10,930,216	10,930,216	284,185,616	5	--	10,267,295	10,267,295	233,580,961
Randolph	6	2,642,928	5,712,600	8,355,528	217,243,728	6	2,515,247	5,731,812	8,247,059	187,620,592
St. Clair	2	1,349,136	856,890	2,206,026	57,356,676	2	1,400,531	761,851	2,162,382	49,194,191
Saline	11	1,156,317	1,678,648	2,834,965	73,709,090	9[d]	767,811	2,030,805	2,798,616	63,668,514
Sangamon	-[c]	1,209,394	--	1,209,394	31,444,244	-[c]	940,926	--	940,926	21,406,067
Vermilion	2	69,748	28,275	98,023	2,548,598	2	73,042	35,383	108,425	2,466,669
Wabash	1	1,966,295	--	1,966,295	51,123,670	1	1,830,070	--	1,830,070	41,634,093
Washington	1	424,680	--	424,680	11,041,680	1	326,871	--	326,871	7,436,315
Williamson	12	1,481,697	2,489,141	3,970,838	103,241,788	17[d]	1,638,704	1,162,394	2,801,098	63,724,980
TOTAL	66	34,968,673	27,573,744	62,542,417	1,626,102,842	71	32,681,230	26,856,897	59,538,127	1,354,492,389
TOTAL (%)		55.9	44.1				54.9	45.1		

[a]Production figures from Illinois State Department of Mines and Minerals, Annual Coal, Oil and Gas Report, 1978 and 1979.
[b]Value calculated at an average of $22.75 per ton for 1979 and $26.00 per ton for 1980.
[c]One mine operated at junction of Christian, Montgomery, and Sangamon Counties.
[d]One mine operated at junction of Williamson and Saline Counties.

TABLE 8. Cumulative surface and total coal production in Illinois by county, 1833-1980

County	Cumulative total surface production (tons)	Cumulative total production (tons)	Years active	Last year active
Adams	338,147	341,924	26	1969
Bond	--	7,355,569	57	1942
Brown	41,761	74,068	42	1980
Bureau	11,094,808	53,823,055	80	1964
Calhoun	--	96,247	27	1912
Cass	--	212,477	53	1941
Christian	--	301,560,789	96	1980
Clark	4,482	4,482	2	1955
Clay	801	801	1	1963
Clinton	--	42,505,139	83	1980
Coles	--	198,932	6	1888
Crawford	17,315	45,400	16	1961
Douglas	--	31,763,499	35	1980
Edgar	207,242	915,698	41	1952
Effingham	--	796	1	1890
Franklin	--	616,548,189	82	1980
Fulton	228,540,997	305,069,791	98	1980
Gallatin	7,272,592	30,144,250	96	1980
Greene	71,090	693,191	84	1967
Grundy	5,752,801	44,494,989	91	1973
Hamilton	--	356,612	18	1980
Hancock	459,329	771,281	72	1958
Hardin	--	40	1	1890
Henry	9,065,783	22,910,053	84	1965
Jackson	38,163,223	105,836,135	99	1980
Jasper	--	23,739	11	1939
Jefferson	5,353,358	119,029,702	77	1980
Jersey	2,290	120,350	59	1951
Johnson	72,781	314,325	62	1978
Kankakee	7,095,649	8,858,008	45	1969
Knox	62,601,174	65,896,605	96	1980
La Salle	2,345,878	65,547,638	79	1960
Livingston	139,091	10,111,437	80	1961
Logan	--	14,533,376	84	1968
Macon	--	11,000,468	65	1947
Macoupin	--	296,245,707	97	1980
McDonough	26,422	2,634,903	69	1951
McLean	--	5,544,139	47	1928
Madison	37,843	164,295,772	83	1964
Marion	--	39,247,722	82	1963
Marshall	4,779	12,516,141	70	1951
Menard	--	13,462,005	84	1965
Mercer	67,080	15,519,862	86	1973
Monroe	--	8,284	13	1941
Montgomery	--	148,428,649	99	1980
Morgan	13,564	190,787	64	1951
Moultrie	--	2,032,236	16	1924
Peoria	30,781,615	95,595,278	99	1980
Perry	251,950,932	349,030,173	99	1980
Pike	2,224	5,081	8	1942
Pope	34,704	36,266	15	1978
Putnam	--	10,071,893	29	1938
Randolph	88,517,318	173,023,469	99	1980
Richland	35	154	1	1890
Rock Island	--	3,846,169	67	1948
St. Clair	108,723,140	349,885,194	99	1980
Saline	49,654,228	256,279,248	99	1980
Sangamon	--	249,094,686	99	1980
Schuyler	6,044,275	7,747,691	84	1966
Scott	3,790	612,476	61	1942
Shelby	925	4,119,763	67	1950
Stark	8,342,056	9,569,336	87	1977
Tazewell	--	17,633,802	75	1956
Vermilion	30,591,303	165,470,737	99	1980
Wabash	12,082	10,948,788	44	1980
Warren	132	685,466	73	1954
Washington	--	18,916,937	90	1980
White	--	1,676,741	36	1940
Will	36,405,022	44,265,271	93	1974
Williamson	80,327,549	430,705,925	99	1980
Woodford	--	7,810,160	70	1951
Total cumulative surface production, 1911-1979		1,070,181,610		
Total cumulative production 1882-1979		4,768,315,966		
Estimated production, all counties, 1833-1881		73,386,123		
Total cumulative production, 1833-1979		4,841,702,089		

[a]Source: Illinois State Department of Mines and Minerals, Annual Coal, Oil and Gas Reports.

ground. The 32.7 million tons produced from the 31 underground mines in 1979 represented 54.9 percent of the total Illinois coal production; in 1980 the underground production represented 55.9 percent of the total production (table 7). With the exception of a few strike years, underground coal mine production has been gradually increasing after its low of 22.2 million tons in 1961.

In contrast, production from surface mining, while showing annual fluctuations, has generally been decreasing since 1967 (fig. 4). In 1979 production from the 40 surface mines totaled 26.9 million tons, while in 1980, 35 surface mines totaled 27.6 million tons. This is 25.8 percent below the 1967 peak of surface mine production in Illinois, when 44 surface operations produced 37.2 million tons of coal. The laws governing reclamation of surface-mined land, depletion of shallow coal deposits, and the rising cost of Illinois farm land are some of the factors responsible for this steady decline.

Table 9 shows the average production and average number of employees per mine for both underground and surface mine operations. In 1979 average output per underground mine increased for the first time since 1975, to 1,054,233 tons, an 18.6 percent rise from 1978. Again in 1980 the average output per underground mine increased by 7 percent to 1,128,022 tons. The average output per surface mine increased for the third year after a five-year decline, from 671,422 tons in 1979 to 787,821 tons in 1980, an increase of 17.3 percent. In 1979 the average number of employees at underground mines decreased, but remained stable in 1980, while the average number of employees at surface mines increased in both 1979 and 1980.

Thirty coal-mining companies operated in Illinois in 1979. Table 10 shows the production for each company. Peabody Coal, Consolidation Coal, Freeman United Coal Mining, and AMAX Coal continued to be the four largest companies, and jointly account for 59 percent of the coal

TABLE 9. Coal mines, mining employees, average production, and average number of employees, by method of mining in Illinois, 1970-1980

Year	Underground				Surface			
	No. of mines	No. of employees	Average output per mine (tons)	Average no. of employees per mine	No. of mines	No. of employees	Average output per mine (tons)	Average no. of employees per mine
1970	29	6,785	1,091,192	233	35	3,429	950,530	98
1971	27	7,088	1,090,886	262	36	3,483	804,480	97
1972	26	7,870	1,219,838	303	33	3,367	1,024,412	102
1973	24	7,794	1,357,390	325	32	3,615	905,353	113
1974	23	8,718	1,352,353	379	32	3,749	842,767	117
1975	21	9,549	1,518,099	455	36	4,097	768,304	114
1976	23	10,396	1,343,987	452	39	4,392	698,063	113
1977	25	11,375	1,183,559	455	45	4,739	539,810	105
1978	28	12,620	888,914	451	43	5,241	554,757	122
1979	31	13,200	1,054,233	426	40	5,299	671,422	132
1980	31	13,219	1,128,022	426	35	5,065	787,821	145

Source: Illinois State Department of Mines and Minerals, Annual Coal, Oil and Gas Report, 1970-1980.

TABLE 10. Illinois coal production, by company, 1979

Rank	Company	No. of Mines		Production (tons)	Percentage of total production	No. of employees
		Underground	Surface			
1	Peabody Coal	5	4	12,167,238	20.43	3,621
2	Consolidation Coal	1	5	9,020,509	15.15	1,910
3	Freeman United Coal Mining	4	2	7,380,283	12.40	2,986
4	AMAX Coal	1	3	6,536,011	10.98	1,553
5	Old Ben Coal	5	0	5,465,632	9.18	2,612
6	Southwestern Illinois Coal	0	2	4,713,391	7.92	760
7	Zeigler Coal	5	0	3,832,363	6.44	1,344
8	Monterey Coal	2	0	3,753,535	6.30	1,228
9	Inland Steel	2	0	1,942,194	3.26	812
10	Midland Coal	0	3	1,903,252	3.20	460
11	Sahara Coal	2	1	1,373,991	2.31	586
12	Morris Coal	2	0	467,305	0.78	300
13	Williamson Coal	0	1	263,313	0.44	60
14	Equality Mining	0	1	189,978	0.32	20
15	Jader Fuel	0	2	143,590	0.24	27
16	Lee Coal	1	1	108,425		15
17	Robertson & Associates	0	1	85,286		75
18	E & B Coal	0	2	51,243		14
19	J.J. Track Mining	0	1	49,589		13
20	Riggs Coal	0	1	17,992		4
21	Crenshaw Coal	0	2	13,515		12
22	A & G Coal	0	1	12,986		3
23	Arrowhead Coal	0	1	12,241	0.65	4
24	Great American Energy	0	1	8,227		12
25	North Side Mine	0	1	7,982		2
26	Illinois Coal, Oil & Gas	0	1	7,787		3
27	Coldwater Coal	0	1	3,804		4
28	Malone Mine	0	1	2,344		2
29	Kenellis Energies	1	0	2,279		54
30	Oxford Construction	0	1	1,842		3
	TOTAL	31	40	59,538,127	100.00	18,499[a]

[a] 13,200 underground and 5,299 surface.

Source: Illinois State Department of Mines and Minerals, Annual Coal, Oil and Gas Report, 1979.

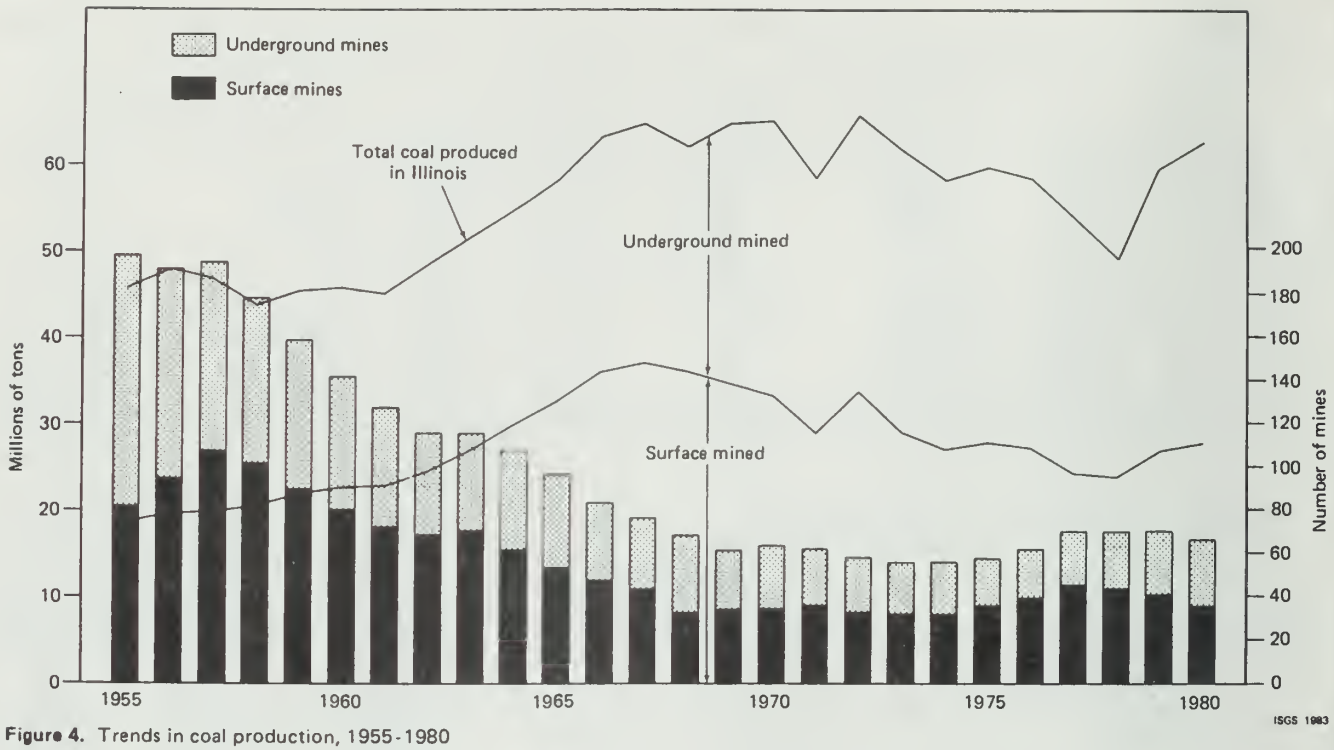

Figure 4. Trends in coal production, 1955-1980

mined in the state. In 1980, 26 coal-mining companies operated in Illinois. Production from each company is shown in table 11. The top four—Peabody Coal, Consolidation Coal, AMAX Coal, and Freeman United Coal Mining—accounted for 56.7 percent of the coal mined in the state.

Employment and wages. According to the Illinois Department of Mines and Minerals, 18,284 persons were working in Illinois coal mines in 1980, 13,219 in underground mining operations and 5,065 in surface operations. This is a 1.2 percent decrease over the 18,499 persons employed in 1979—13,200 in underground operations and 5,299 in surface operations. Most coal output from Illinois was produced by United Mine Workers (UMW) members.

The Illinois Department of Labor reported that the average hourly wages for bituminous coal miners increased from $9.82 in 1979 to $11.42 in 1980 (table 4), and the average number of hours worked decreased from 40.5 to 39.8.

Mine productivity. Mine productivity is measured in tons/person-day. The number of tons/person-day represents the average amount of coal, in tons, mined by a single miner working an 8-hour shift. The average productivity of underground mines in Illinois began to decline in 1970 when the Federal Health and Safety Act of December 1969 went into effect. Although productivity increased from 10.7 tons/person-day in 1978 to 11.9 tons in 1979, it is 48 percent below the 1969 peak level of 22.9 tons/person-day.

After hitting a peak of 41.6 tons/person-day in 1967, average surface-mine productivity has been steadily declining and dropped to 20.1 tons/person-day in 1979 (fig. 5). The decrease in surface-mine productivity was caused by an increase in the average thickness of overburden that had to be removed before the coal could be extracted, and by an increase in the personnel that were required to produce a ton of coal in compliance with the rising demand for reclamation.

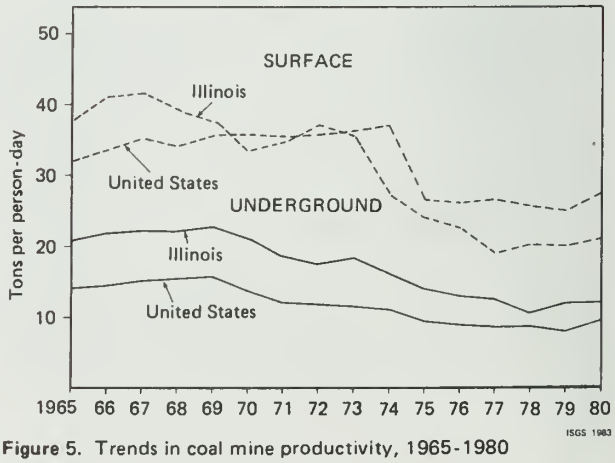

Figure 5. Trends in coal mine productivity, 1965-1980

TABLE 11. Illinois coal production, by company, 1980

Rank	Company	No. of Mines		Production (tons)	Percentage of total production	No. of employees
		Underground	Surface			
1	Peabody Coal	5	4	11,648,668	18.63	3,606
2	Consolidation Coal	1	5	8,612,227	13.77	1,772
3	AMAX Coal	1	3	8,081,978	12.92	1,613
4	Freeman United Coal Mining	4	2	7,100,227	11.35	2,559
5	Old Ben Coal	5	0	6,097,778	9.75	2,591
6	Southwestern Illinois Coal	0	2	5,456,052	8.72	840
7	Monterey Coal	2	0	5,002,525	8.00	1,318
8	Zeigler Coal	5	0	4,041,557	6.46	1,363
9	Inland Steel	2	0	2,294,830	3.67	1,076
10	Sahara Coal	3	1	1,445,586	2.31	594
11	Midland Coal	0	3	1,276,468	2.04	361
12	Classic Coal	1	0	406,614	0.65	269
13	Kenellis Energies	1	0	279,796	0.45	138
14	Williamson Coal	0	1	256,813	0.41	60
15	Equality Mining	0	1	240,601	0.39	25
16	Jader Fuel	0	3	96,527		35
17	Coal Producers	1	0	69,748		5
18	E & B Coal	0	2	45,154		13
19	J. J. Track Mining	0	1	37,230		13
20	Lee Coal	0	1	28,275	0.48	10
21	North Side Mine	0	1	9,234		2
22	Riggs Mining	0	1	7,619		3
23	A & G Coal	0	1	5,957		2
24	Great American Energy	0	1	494		13
25	Coldwater Coal	0	1	459		2
26	Malone Mine	0	1	--		1
	TOTAL	31	35	62,542,417	100.00	18,284[a]

[a] 13,219 underground and 5,065 surface.

Source: Illinois State Department of Mines and Minerals, Annual Coal, Oil and Gas Report, 1980.

Prices. In 1980 the average price of Illinois coal (f.o.b. mine) was $26.00 per ton, 14.3 percent higher than the 1979 level of $22.75. The average price (f.o.b. mine) of coal mined underground in Illinois in 1979 was $24.08 per ton, and that of surface-mined coal was $21.13 per ton.

Shipments. Illinois coal is shipped to various parts of the United States for use by electric utilities, for manufacturing coke, and for other industrial purposes. Of the 59.3 million tons of Illinois coal shipped in 1979 (including mine stock) 49.9 million tons were use by electric plants, 3.0 million tons by coke plants manufacturing metallurgical coke, and 6.3 million tons were sold to industrial plants and 177,000 tons to retail dealers (table 12). Sixty-two million tons were shipped in 1980 (including mine stock); of this, 52.7 million tons were use by electric plants, 2.9 million tons by coke plants, and 6.2 million tons by industrial plants. The remaining 157,000 tons were sold to retail dealers.

In 1980 about 35.5 percent of the Illinois coal shipped to electric utilities was consumed within the state; the remainder was shipped to surrounding midwestern states and to southeastern states. The market for Illinois utility coal continued to increase in the southeastern states of Georgia, Florida, Mississippi, and Tennessee, where electric power demands continue to grow and Illinois coal competes favorably with higher priced Appalachian coal. The Illinois utility market increased in all states except Wisconsin, where Illinois has been losing its utility market to the low-sulfur coals from western states that meet the standards for emission of sulfur oxides. The use of Illinois coal in Illinois for utilities was up 5.2 percent in 1979, but declined approximately 1 percent in 1980.

Approximately 18 percent of the Illinois coal shipped for coking purposes was consumed in Illinois; around 80 percent was shipped to nearby coke plants in northwestern Indiana.

Of the retail coal shipped in 1979 and 1980, 36.6 and 34.8 percent, respectively, was consumed within the state. The rest was shipped to nearby midwestern states. Less than 40 percent of the Illinois coal used for other industrial purposes in both 1979 and 1980 was consumed in Illinois. Missouri consumed 23.2 and 19.6 percent, for 1979 and 1980, respectively. Other consumers were Iowa, Wisconsin, Indiana, Georgia, Florida, Minnesota, and Michigan.

Transportation. In 1979 Illinois coal was shipped from the mine to the consuming sector by railroad, barge, truck, and

TABLE 12. Illinois coal shipments, by state destination and consuming sector, 1975-1980

Consuming sector	Wisconsin	Minnesota & Michigan	Iowa	Missouri	Indiana	Kentucky	Georgia & Florida	Other states[a]	Exports[b] and miscellaneous	Illinois	Total[d]
Electric utilities											
1975	4,595	2,013[c]	2,290	10,496	3,081[c]	1,982	987	1,834	--	22,006	49,284
1976	4,129	1,967[c]	2,090	12,084	3,261	1,487	1,525	993	--	21,414	48,950
1977	3,839	1,863[c]	1,865	11,822	3,791	997	1,440	1,056	--	18,432	45,105
1978	3,536	1,465	1,660	9,708	3,330	335	1,874	1,288	12	17,934	41,142
1979	3,236	1,501	1,955	11,653	6,843	464	2,950	2,382	--	18,865	49,851
1980	2,805	1,313	1,644	12,649	7,616	222	3,970	3,786	--	18,700	52,705
Coke & gas plants											
1975	--	--	--	--	2,959[c]	--	--	--	229	1,081	4,269
1976	--	--	--	--	2,536	--	--	--	43	982	3,561
1977	--	--	--	--	2,039	--	--	73	--	862	2,974
1978	--	--	--	--	1,615	--	--	40	--	486	2,141
1979	--	--	--	86	2,459	--	--	--	24	444	3,013
1980	--	--	--	74	2,335	--	--	--	--	545	2.053
Retail dealers											
1975	1	--	7	100	14	--	--	--	12	196	330
1976	--	--	14	102	7	--	--	--	13	324	460
1977	1	4[c]	7	43	8	--	--	1	17	175	256
1978	19	4	13	20	3	--	--	--	12	100	171
1979	20	10	41	28	15	--	--	--	--	63	177
1980	--	5	12	12	1	--	--	--	20	107	157
All others											
1975	514	315[c]	720	1,458	219	--	--	9	8	2,761	6,004
1976	534	265[c]	735	1,486	276	--	--	--	7	2,252	5,555
1977	600	270[c]	755	1,540	570	--	--	3	1	2,298	6,037
1978	439	185	541	1,272	492	--	--	71	46	1,989	5,035
1979	575	187	859	1,449	574	--	201	49	49	2,364	6,258
1980	521	201	928	1,212	517	8	447	78	47	2,222	6,181
Totals[d]											
1975	5,110	2,328	3,017	12,054	6,273	1,982	987	1,843	249	26,044	60,029
1976	4,663	2,232	2,839	13,672	6,080	1,487	1,525	993	63	24,972	58,526
1977	4,440	2,137	2,627	13,405	6,408	997	1,440	1,133	18	21,767	54,372
1978	3,994	1,654	2,214	11,000	5,440	335	1,874	1,399	70	20,509	48,489
1979	3,831	1,698	2,855	13,216	9,891	464	3,151	2,431	73	21,738	59,348
1980	3,326	1,520	2,583	13,947	10,469	230	4,417	3,864	67	21,575	62.002

[a] Includes Al (1975-1980), MS (1975-1980), TN (1975-1980, OH, LA (1977-1980, WA (1977), and PA (1977-1978), KS (1980), TX (1980).
[b] Primarily to Mexico and Canada
[c] Estimated
[d] Totals may not add to totals shown due to independent rounding.

Source: U.S. Bureau of Mines Bituminous Coal and Lignite Distribution Quarterly, 1975-1980.

conveyor belt. At the mine sites, 45.5 million tons of coal were loaded on railroad cars for shipment, of this amount 10 million tons (22 percent) were moved to docks for shipment by barge. The total amount of coal shipped by barge (including the 10 million tons shipped by rail to the barge) was 16.5 million tons. Coal shipped by truck totaled 2.7 million tons. The remaining 4.8 million tons were shipped to mine-mouth electric generating plants by conveyor belt.

Tonnage of Illinois coal handled by specific railroads in 1979 is:

Missouri Pacific Lines	16,778,776
Illinois Central Gulf Railroad Co.	10,503,097
Burlington Northern, Inc.	5,581,600
Conrail	2,876,654
Chicago & Northwestern Transportation Co.	2,854,619
Southern	1,296,951
Others	5,634,978
Total coal shipped by rail	45,526,675

In 1980 tonnage of Illinois coal handled by specific railroads is:

Missouri Pacific Lines	15,906,511
Illinois Central Gulf Railroad Co.	15,096,687
Burlington Northern, Inc.	4,842,029
Chicago & Northwestern Transportation Co.	2,956,993
Conrail	2,922,007
Southern	2,089,261
Others	5,073,810
Total coal shipped by rail	48,887,298

The top two of the 13 railroads moving Illinois coal handled 59.9 and 63.4 percent of the total in 1979 and 1980, respectively: Missouri Pacific Lines, 36.8 and 32.5 percent; Illinois Central Gulf Railroad Co., 23.1 and 30.9 percent.

Consumption. Coal consumed in Illinois in 1980 totaled 42.1 million tons (table 13), 1.4 percent less than in 1979. The coal-consuming sectors included electric utilities

TABLE 13. Shipment of coal for consumption in Illinois, by area of origin and consuming sector, 1975-1980

Consuming sector	Illinois	Western Kentucky	Indiana	Ohio, eastern Pennsylvania,[a] and northern West Virginia	Southern West Virginia,[b] Virginia, and eastern Kentucky	Western Interior[c] states	Western states[d]	Montana[e] and Washington	Total coal[g] consumed in Illinois
Electric utilities									
1975	22,006	844	371	--	174	90[f]	1,906[f]	9,462	34,853
1976	21,414	1,330	477	2[f]	559	100[f]	2,370[f]	8,759	35,011
1977	18,432	1,185	459	39[f]	995	105[f]	4,651[f]	6,166	32,032
1978	17,934	725	674	86	1,207	26	6,904	5,639	33,195
1979	18,867	820	849	491	1,081	62	8,407	6,691	37,268
1980	18,700	463	669	--	733	26	11,997	3,920	36,508
Coke & gas plants									
1975	1,081	--	--	40	1,776	64[f]	133[f]	--	3,094
1976	982	--	--	35[f]	1,541	47[f]	130[f]	--	2,735
1977	862	--	--	47[f]	1,288	87[f]	147[f]	--	2,431
1978	486	--	--	121	1,365	159[f]	--	--	2,131
1979	444	--	--	225	1,347	87	--	--	2,103
1980	545	--	--	327	1,095	62	--	--	2,052
Retail dealers									
1975	196	2	--	--	253	41[f]	15[f]	--	507
1976	324	3	--	2[f]	191	7[f]	10[f]	--	537
1977	175	2	--	40[f]	103	6[f]	18[f]	--	344
1978	100	2	--	--	53	3	52	--	210
1979	63	2	--	--	22	--	2	--	89
1980	107	1	30	--	15	--	--	--	154
All others									
1975	2,761	55	15	3	481	40[f]	135[f]	4	3,494
1976	2,252	48	--	2[f]	408	67[f]	395[f]	--	3,172
1977	2,298	56	62	70	443	78[f]	485[f]	--	3,492
1978	1,989	80	157	--	286	186	466	--	3,164
1979	2,364	27	185	35	467	51	121	9	3,259
1980	2,222	9	381	3	695	19	--	--	3,391
Total[g]									
1975	26,044	901	386	43	2,684	235	2,189	9,466	41,948
1976	24,972	1,381	477	41	2,699	221	2,905	8,759	41,455
1977	21,767	1,243	521	196	2,829	276	5,301	6,166	38,299
1978	20,509	807	831	207	2,911	374	7,422	5,639	38,700
1979	21,738	849	1,034	751	2,917	200	8,530	6,700	42,719
1980	21,575	472	1,080	330	2,539	107	11,997	3,920	42,106

[a] Includes Districts 1, 3, 4, and 6 (MD, OH, eastern PA, northern WV).
[b] Includes Districts 7, 8, and 13 (Al, Ga, eastern KY, NC, TN, VA, southern WV).
[c] Includes Districts 14 and 15 (AR, KS, MO, OK, TX).
[d] Includes Districts 16, 17, 19-21, (CO, ID, ND, NM, SD, UT, WY).
[e] Includes Districts 22 and 23 (AK, MT, OR, WA).
[f] Estimated: Includes minor amounts of coal shipped to other consuming sectors.
[g] Totals may not add to totals shown due to independent rounding.

Source: U.S. Bureau of Mines, Bituminous Coal and Lignite Distribution, Calendar years 1975-1980.

(86.7 percent), coke and gas plants (4.9 percent), retail dealers (0.4 percent), and industrial and other users (8.0 percent).

Of the 42.7 million tons of coal used in Illinois in 1979, 21.7 million tons (50.9 percent) were produced from mines within the state; in 1980, 21.6 million (51.2 percent) of the 42.1 million tons came from Illinois. The amount of Illinois coal used within the state increased by 6 percent from 20.5 million tons in 1978 to 21.7 million tons in 1979, but decreased 0.7 percent in 1980. The use of coal from western states (primarily Colorado, Montana, Utah, and Wyoming) has been rapidly increasing since 1971, when extensive development of western coal fields began and the Federal Health and Safety Act went into effect. In 1971 western coal accounted for only 9.5 percent of total coal consumed in Illinois, but increased to 36 percent of the total in 1979, and to 38 percent in 1980 (table 13).

Although Indiana, Kentucky, and West Virginia shipped coal into Illinois for use in electric utilities (table 13), about 44 percent of the total 36.5 million tons consumed for this purpose in 1980 came from western states. Illinois supplied 51 percent of the coal to electric utilities, a decrease from the 87 percent of 1970. The use of western coal by Illinois electric utilities is increasing and is expected to continue until dependable, economically feasible methods are developed for removing sulfur from Illinois coal. The installation of scrubbers and the removal of 70 to 90 percent of the sulfur are mandated in all new coal-burning units constructed after September 18, 1978, under the June 1979 New Source Performance Standards of the Clean Air Act; however, the dependability of scrubbers for sustained periods must be improved for satisfactory application.

Illinois coke and gas plants used about 27 percent of

the coal from mines within the state and 53 percent from mines in southern West Virginia, Virginia, and eastern Kentucky. Of the 154,000 tons of coal consumed by retail dealers in Illinois, 69 percent was supplied within the state. Illinois supplied 66 percent of the 3.4 million tons of coal used for industrial and other purposes, with 20 percent coming from southern West Virginia, Virginia, and eastern Kentucky.

Crude Oil

Production. Illinois crude oil production continues to decline–24,171 wells produced 21.8 million barrels in 1979–6.7 percent less (1,569,164 fewer barrels) than in 1978. The production was valued at $511.9 million, with an average unit value of $23.49/barrel (table 14). Of the 21.8 million barrels produced in 1979, 12.2 million barrels were produced by secondary methods (fig. 6), with waterfoods accounting for 12.1 million barrels, or 55.6 percent of the total oil produced. Pressure maintenance projects reported 134,800 barrels, or 0.6 percent of the total oil produced.

Forty-three counties produced crude oil in 1979. The ten largest producing counties, each producing more than 600,000 barrels, contributed 76.7 percent of the state's oil production in 1979 as follows:

County	(%)	County	(%)
White	14.3	Crawford	6.0
Wayne	13.7	Wabash	4.1
Lawrence	10.1	Clay	4.1
Marion	9.8	Richland	3.4
Fayette	8.1	Jefferson	3.1

Crude oil production increased 4.2 percent, from 21.8 million barrels in 1979 to 22.7 million barrels in 1980 (table 14). At an estimated $36.00 per barrel, 1980 production was valued at $817.3 million.

Forty-four counties produced crude oil in 1980. The six largest oil-producing counties contributed 58.7 percent of the state's oil production in 1980 as follows:

County	(%)	County	(%)
White	13.8	Marion	8.7
Wayne	13.7	Fayette	7.2
Lawrence	9.1	Crawford	6.2

Twelve of the 380 oil fields producing more than 200,000 barrels in Illinois in 1979 contributed 67.1 percent of the production (table 15), while in 1980, 14 fields generated 14.7 million or 65 percent of the production. The five largest fields–Southeastern Illinois, Clay City Consolidated, Salem Consolidated, Louden, and New Harmony Consolidated–accounted for 54.8 percent of the 1979 crude oil production in Illinois, compared to 51.9 percent in 1980.

Figure 6 shows the trends of crude oil production. Crude oil production reached a peak of 146.8 million barrels in Illinois in 1940. Except for slight increases in 1954 to 1956 and again in 1962, oil production by primary recovery methods declined steadily from 1940 to 1974. Since 1974, production by primary recovery has been slightly increasing. In the early 1940s Illinois began producing crude oil by secondary recovery methods, primarily waterflooding. Increased waterflooding activity, in conjunction with the introduction of the hydrofrac (hydraulic fracturing) method of well completion in 1954, reversed the downward trend of total oil production from 1954 through 1962. Since that time, both primary and secondary production has declined steadily as reserves have been depleted. The extent of this depletion can be seen by comparing the January 1956 reserves figure of 700,000,000 barrels with the December 1981 figure of 129,000,000 barrels.

Refineries. According the the U.S. Bureau of Mines, 14 refineries were operating in Illinois on January 1, 1980, with a total capacity of 1,213,900 barrels/day–slightly

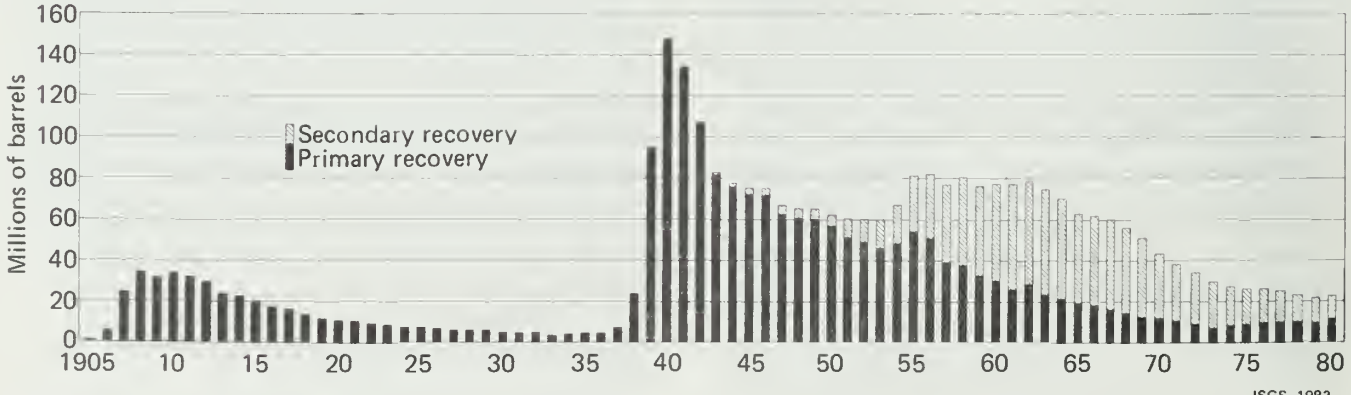

Figure 6. Annual crude oil production, 1905-1980

TABLE 14. Cumulative crude oil production in Illinois, by county, 1888-1980

County	Cumulative production 1888-1980[a] (1000 bbl)	1980 production (1000 bbl)	1980 percentage of total Illinois production	1980 value[c] ($1000)	1979 production[b] (1000 bbl)	1979 percentage of total Illinois production	1979 value[c] ($1000)
Adams	136	5	0.0	192	6	0.0	139
Bond	7,524	62	0.3	2,225	65	0.3	1,528
Brown	249	6	0.0	205	2	0.0	53
Champaign	7	--	--	--	--	--	--
Christian	26,547	316	1.4	11,374	242	1.1	5,688
Clark-Cumberland	91,859	388	1.7	13,955	324	1.5	7,610
Clay	136,027	980	4.3	35,281	887	4.1	20,839
Clinton	85,397	400	1.8	14,386	353	1.6	8,298
Coles	23,542	126	0.6	4,533	119	0.6	2,804
Crawford	234,188	1,405	6.2	50,592	1,309	6.0	30,753
DeWitt	3,271	93	0.4	3,356	90	0.4	2,124
Douglas	3,629	10	0.0	366	9	0.1	210
Edgar	4,013	87	0.4	3,149	84	0.4	1,970
Edwards	47,996	487	2.1	17,534	436	2.0	10,233
Effingham	17,236	257	1.1	9,238	264	1.2	6,194
Fayette	396,848	1,636	7.2	58,906	1,766	8.1	41,482
Franklin	72,612	544	2.4	19,568	395	1.8	9,268
Gallatin	51,779	397	1.8	14,302	400	1.8	9,407
Hamilton	133,665	501	2.2	18,018	415	1.9	9,738
Jackson	12	1	0.0	51	1	0.0	34
Jasper	53,004	608	2.7	21,889	523	2.4	12,297
Jefferson	84,806	709	3.1	25,524	680	3.1	15,965
Lawrence	399,379	2,064	9.1	74,300	2,195	10.1	51,561
Macon	1,186	117	0.5	4,222	76	0.4	1,778
Macoupin	288	19	0.1	672	6	0.0	141
Madison	17,651	109	0.5	3,908	91	0.4	2,144
Marion	415,307	1,968	8.7	70,864	2,140	9.8	50,274
McDonough Hancock[b]	5,580	23	0.1	819	25	0.1	592
Monroe	58	25	0.1	915	15	0.1	349
Montgomery	125	2	0.0	75	2	0.0	43
Moultrie	107	2	0.0	73	2	0.0	48
Perry	849	14	0.1	507	13	0.1	294
Randolph	4,621	46	0.2	1,650	46	0.2	1,071
Richland	104,065	864	3.8	31,100	748	3.4	17,564
St. Clair	3,458	14	0.1	508	26	0.1	617
Saline	21,787	182	0.8	6,546	147	0.7	3,447
Sangamon	3,676	213	0.9	7,659	160	0.7	3,752
Schuyler	1	--	--	--	--	--	--
Shelby	1,788	35	0.1	1,275	28	0.1	658
Wabash	111,107	881	3.9	31,730	895	4.1	21,014
Washington	31,911	427	1.9	15,380	366	1.7	8,601
Wayne	252,849	3,109	13.7	111,926	2,988	13.7	70,182
White	291,672	3,143	13.8	113,149	3,113	14.3	73,124
Williamson	2,447	66	0.3	2,371	87	0.4	2,055
Other	5,386	360	1.6	12,971	254	1.2	5,969
Total[d]	3,149,716	22,702	100.0	817,265	21,793	100.0	511,912

[a] 1980 production includes 360 thousand barrels and 1979 production includes 254 thousand barrels that could not be assigned to individual fields or counties.
[b] No oil production reported for Hancock County in 1971-1978. A very small amount (116 barrels) was reported for 1979; 1,998 barrels for 1980.
[c] Value calculated at an estimated average price of $36.00 per barrel for 1980 and an API average figure of $23.49 per barrel for 1979.
[d] May not add up because of independent rounding.

Source: Illinois State Geological Survey Oil and Gas Section.

less than capacity a year earlier.

Of the 381.9 million barrels of crude oil received at Illinois refineries in 1979, 182 million barrels came from other states and 188 million barrels came from foreign countries; the rest was of Illinois origin.

Substitute natural gas plants. Illinois contains two of the 13 plants in the nation that produce substitute natural gas (SNG). The Northern Illinois Gas Company plant near Morris in Grundy County was the first plant to operate, and People's Gas, Light and Coke Company later opened a plant near Edwood in Will County. SNG is a small portion of total gas production; however, it supplements the natural gas supply during periods of greatest need. The combined daily capacity of these two plants is approximately 320 million cubic feet. Many of the SNG plants that were in the planning stages in various parts of the country have been cancelled or indefinitely postponed because of the Federal Energy Administration's restrictive policy regarding the allocation of petroleum feedstocks for SNG production.

Consumption. Consumption of major petroleum products in Illinois from 1976 to 1980 can be seen in table 16. In 1980 gasoline consumption in Illinois decreased 3.5 percent from 1979, but represented 4.5 percent of the total amount of gasoline consumed in the United States (table 16).

Distillate fuel oil consumption also decreased in 1980 by 25 percent from 1979 and consumption of residual fuel oil increased about 2 percent.

During 1979, consumption of kerosene in Illinois

TABLE 15. Illinois crude oil production, by major field, 1979 and 1980

Field	County	1980 Crude oil production (1000 bbl)	1980 % of state total	1979 Crude oil production (1000 bbl)	1979 % of state total	Change from 1979-1980 (%)
Southeastern Illinois	Wabash Lawrence Crawford Clark Cumberland Jasper	3,945.7	17.4	3,883.6	17.8	+ 1.6
Clay City Consolidated	Clay Wayne Richland Jasper	3,127.0	13.8	2,913.7	13.4	+ 7.3
Salem Consolidated	Marion Jefferson	1,812.5	8.0	1,978.9	9.1	- 8.4
Louden	Fayette Effingham	1,601.6	7.1	1,730.0	7.9	- 7.4
New Harmony Consolidated	White Wabash Edwards	1,281.6	5.6	1,443.6	6.6	- 11.2
Sailor Springs Consolidated	Clay Jasper Effingham	545.0	2.4	516.4	2.4	+ 5.5
Phillipstown Consolidated	White Edwards	517.9	2.3	610.7	2.8	- 15.2
Roland Consolidated	White Gallatin	368.6	1.6	371.7	1.7	- 0.8
Johnsonville Consolidated	Wayne	304.6	1.3	317.1	1.4	- 3.9
Dale Consolidated	Franklin Hamilton Saline	297.0	1.3	253.2	1.2	+ 17.3
Keenville	Wayne	285.5	1.3	402.2	1.8	- 29.0
Mill Shoals	Hamilton Wayne White	232.3	1.0	-	-	-
Storms Consolidated	White	219.8	1.0	211.0	1.0	+ 4.2
Maple Grove	Edwards Wayne	209.8	0.9	-	-	-
		14,748.9	65.0	14,632.1	67.1	+ 0.8

Source: Illinois State Geological Survey Oil and Gas Section.

TABLE 16. Consumption of major petroleum products in Illinois, 1976-1980

Product	Unit	1980	1979	1978	1977	1976
Gasoline (excluding naphtha)[a]	thousand bbl	114,685	123,480	132,522[c]	129,137[c]	126,842[c]
Kerosene[b]	thousand bbl	606	920	1,841	1,435	1,471
Distillate fuel oil[b]	thousand bbl	36,818	49,349	61,760	58,459	58,877
Residual fuel oil[b]	thousand bbl	28,394	27,717	30,111	26,598	23,659
Liquefied gases[d]	thousand gal					
Propane		568,830	767,380	924,603	946,213	973,325
Butane		W	97,785	9,652	12,955	12,080
Butane-propane mix		W	W	2,787	229	202
TOTAL		1,342,506	1,711,367	937,042	959,397	985,607
Asphalt[e]	tons	1,770,882	2,330,603	2,264,356	2,159,575	1,795,978
Road oil[e]	tons	22,318	35,687	91,700	39,387	52,366

[a]Basic Petroleum Data Book, American Petroleum Institute.
[b]U.S. Bureau of Mines Sales of Fuel Oil and Kerosene, Annual Statements.
[c]Revised.
[d]U.S. Bureau of Mines Sales of Liquefied Petroleum Gases and Ethane, Annual Statements.
[e]U.S. Bureau of Mines Sales of Asphalt, Annual Statements.

decreased by 50 percent and in 1980 it again decreased 34.1 percent. Consumption of liquefied gases increased by 82.6 percent, but decreased 21.6 percent in 1980. The use of asphalt products in the state increased by 3 percent in 1979 and decreased 24 percent in 1980, while consumption of road oil decreased by 61 percent in 1979 and decreased 37.5 percent in 1980.

Natural Gas

Production. Natural gas is produced in Illinois from gas wells and oil wells; however, only a small amount is from oil wells (table 17). This gas comes from the Keenville and Louden fields (table 18). In 1979, 1,585 million cubic feet of gas was marketed (table 17) at an average wellhead value of $1.86/thousand cubic feet (Mcf), a 44 percent increase in unit value over 1978. The total value of the marketed gas is calculated to be $2,949,000. In 1980, 1,574 million cubic feet of gas was marketed at an estimated average wellhead value of $1.90/Mcf. Continuing the trend of the last few years, the amount of natural gas marketed from Illinois fields in 1979 increased about 37 percent from 1978 to 1979. Only 198 million cubic feet, valued at $0.14/Mcf, were marketed in 1970, as compared to the 1,585 million cubic feet, valued at $1.86/Mcf, marketed in 1979. This trend was broken in 1980 as marketed production decreased slightly.

Table 18 shows natural gas for 1979 recovered in 11 counties: Coles furnished 33.7 percent of total production; St. Clair, 17.5 percent; Pike, 15.2 percent; Wayne, 10.9 percent; Edgar, 7.2 percent; Saline, 6.2 percent; Fayette and Effingham, 6.0 percent; Gallatin, 2 percent; Bond, 0.8 percent; and Randolph, 0.5 percent.

Table 18 shows natural gas for 1980 is presently being recovered in 12 counties: Coles furnished 28.6 percent of total production; Pike, 21.8 percent; Wayne, 15.3 percent; St. Clair, 13.4 percent; Saline, 9.4 percent; Edgar, 7.4 percent; Gallatin, 2.1 percent; Bond, 1.2 percent; Randolph, Madison, Montgomery, and Williamson, 0.8 percent.

TABLE 17. Production of natural gas in Illinois, 1975-1980

	Production (million cu ft)				
	Withdrawals			Disposition	
Year	From gas wells	From oil wells	Total	Marketed	Flared
1975	1,440	—[a]	1,440	1,440	—
1976	1,556	—[a]	1,556	1,556	—
1977	1,003	—[a]	1,003	1,003	—
1978	958.5	200.5	1,159	1,159	—
1979	1,317.6	267.4	1,585	1,585	—
1980	1,333.6	240.4	1,574	1,574	—

[a]Not reported separately; included under gross withdrawals from gas wells.

Source: U.S. Bureau of Mines, Minerals Yearbooks, 1975-1980 and Oil and Gas Section, Illinois State Geological Survey.

TABLE 18. Production of natural gas in Illinois, by field and county, 1979 and 1980

Gas field	County	Production (million cu ft) 1980	1979	Percentage of change 1979-1980
Eldorado East	Gallatin	32.9	33.5	- 1.8
Harco East	Saline	24.4	9.8	+ 149.0
Mattoon	Coles	450.4	533.7	- 15.6
Raleigh	Saline	7.5	7.8	- 3.8
Stubblefield South	Bond	18.3	13.4	+ 36.6
Mine Gas	Saline	97.6	69.3	+ 40.8
Keenville	Wayne	240.4	172.3	+ 39.5
Louden	Fayette			
	Effingham	--	95.1	--
New Athens	St. Clair	95.4	124.7	- 23.5
Eldorado Consol	Saline	18.6	9.9	+ 87.9
Eden	Randolph	6.9	8.3	- 16.9
Grandview-Inclose	Edgar	117.0	113.7	+ 2.9
St. Libory	St. Clair	115.4	152.8	- 24.5
Fishhook	Pike	342.8	240.4	+ 42.6
Highland	Madison	5.3	--	--
Waggoner	Montgomery	1.0	--	--
Johnston City East	Williamson	0.3	--	--
Total[a]		1,574.2	1,584.7	- 0.7

[a] Totals may not add because of rounding.

Source: Illinois State Geological Survey Oil and Gas Section.

Consumption. Natural gas consumption in Illinois decreased 2.7 percent in 1979 to 1,142.7 billion cubic feet, and in 1980 decreased 4.6 percent, to 1,089.7 billion cubic feet, (table 19). The 12 percent decline in consumption from the 1971 level of 1,242.8 billion cubic feet (fig. 7) reflects the decreasing supply and increasing price of natural gas rather than a diminished demand. The value of natural gas consumed in Illinois in 1979 was about $2.84 Mcf; in 1980 it rose to $3.40 Mcf, a 359 percent increase over the $0.74 Mcf of 1970.

Of the 1,089.7 billion cubic feet of gas consumed in Illinois in 1980, 98.6 percent (1,074.8 billion cubic feet) was delivered to consumers; the remaining 1.4 percent was lost in extraction, used for pipeline fuel, or burned as lease plant fuel. The consumption of natural gas by consumer class is shown in figure 7. In 1979 consumption decreased in all sectors but electric utitilities (up 39.8 percent) and other uses (up 41.0 percent); in 1980 all sectors decreased, with the exception of other consumers (up 18.9 percent).

INDUSTRIAL AND CONSTRUCTION MATERIALS

Clays

Production. Common clay, refractory or fire clay, and absorbent clay (fuller's earth) are the types of clay mined in Illinois. A total of 541,838 short tons of clay (excluding fuller's earth) was produced in Illinois in 1979, compared to 459,221 short tons in 1980. A large part of this was common clay and the rest, refractory clay. Illinois also had absorbent clay production in 1980 (24.3 percent higher than in 1979). The average unit value of common clay in 1980 was $4.59 per ton, 12.5 percent more than the $4.08 per ton in 1979 and for refractory clays $10.34 per ton, 10 percent more than the $9.40 per ton in 1979. The total value of these clays $1,918,873 in 1980 and $2,355,435 in 1979.

Of the 11 Illinois counties that mined clay in 1979, the largest amount was mined in Livingston County—205,962 tons (38.0 percent). Fifteen operations worked by 12 companies in nine counties produced common clay and shale in 1979. In 1980 common clay was produced in seven counties by ten companies at 13 operations—La Salle County was the largest producer with 122,377 tons. Refractory clay was mined in Grundy County at only one mine by

TABLE 19. Consumption of natural gas in Illinois, by consumer class, 1978-1980

Consumer class	1978 Quantity (million cu ft)	1979 Quantity (million cu ft)	1980 Quantity (million cu ft)	Percentage of change 1978-1979	Percentage of total 1979 consumption	Percentage of change 1979-1980	Percentage of total 1980 consumption
Residential	520,525	495,570	478,489	- 4.8	43.4	- 3.4	43.9
Commercial	245,723	233,870	224,219	- 4.8	20.5	- 4.1	20.6
Industrial	366,548	359,520	348,939	- 1.9	31.4	- 2.9	32.0
Electric utilities	22,568	31,547	19,165	+ 39.8	2.8	- 39.2	1.7
Other consumers[a]	6,172	3,329	3,959	- 46.1	0.2	+ 18.9	0.4
Total delivered to consumers	1,161,536	1,123,836	1,074,771	- 3.2	98.3	- 4.4	98.6
Other uses[b]	13,398	18,896	14,949	+ 41.0	1.7	- 20.9	1.4
Total consumption	1,174,934	1,142,732	1,089,720	- 2.7	100.0	- 4.6	100.0

[a] Includes municipalities and public authorities that use natural gas for institutional heating, street lighting, and other purposes.

[b] Includes lease and plant fuel, pipeline fuel, and extraction loss.

Source: U.S. Department of Energy

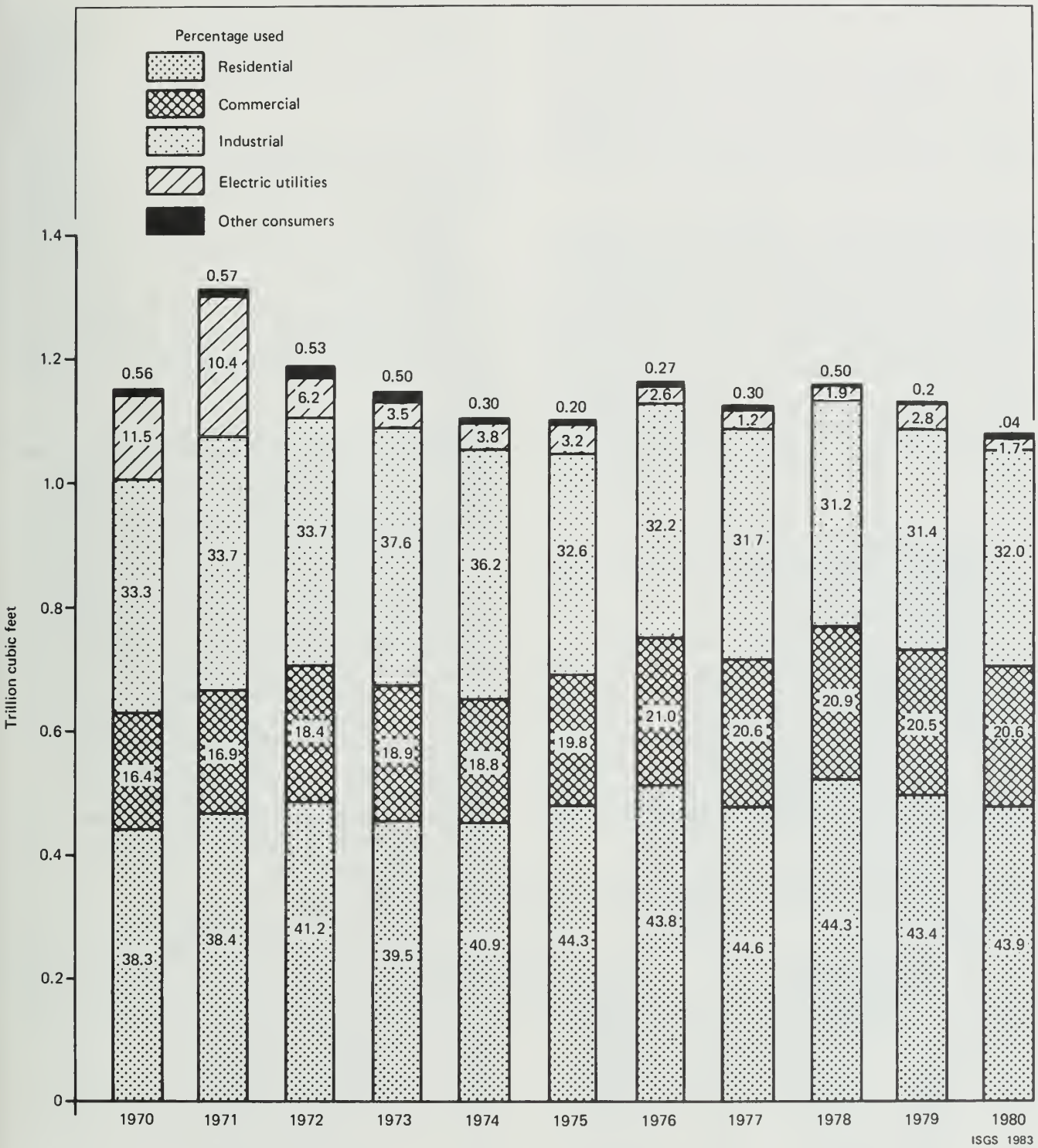

Figure 7. Consumption of natural gas, 1970-1980

one company in 1979 and 1980. Absorbent clay continues to be produced by two companies in Pulaski County.

Figure 8 shows the trends in Illinois clay production. The refractory clay production for 1979 and 1980 are withheld to avoid disclosing confidential data from individual companies; therefore, only total clay production is shown. Depending on prevailing market conditions, clay production seems to fluctuate widely from year to year; however, it has been steadily declining since 1968. This trend is not due to slack demand but rather to strong competition from out-of-state production.

Consumption and uses. The common clays and shales mined in Illinois are used principally in the manufacture of brick, sewer pipe, drain tile, wall tile, dinnerware, lightweight aggregates and cements. Of the common clay produced in 1979 and 1980, 61.6 and 45.5 percent, respectively, were used in the production of building brick; 10 and 28.3 percent were used in the production of portland cement, structural concrete, concrete blocks and highway surfacing; and the remaining 28.4 and 26.2 percent were used in manufacture of sewer pipe and drain tile. The output of drain tile declined because of increased use of plastic pipe. No production of gypsum products or terra cotta were reported in 1979 or 1980.

Illinois produced 68.8 million building or common and face bricks in 1980 (down 35.1 percent from 1979) and shipped 63.1 million (down 32.4 percent) at a value of $7.8 million (down 27.5 percent).

Illinois production of refractory clay, used for manufacturing refractory brick, stoneware, and other clay products, decreased this year with only one producer reporting.

Production of absorbent clay in Illinois was up 24.8 percent in quantity and 13.7 percent in value from 1979. The absorbent clay produced in Illinois is used in animal litter and oil and grease absorbents. Illinois ranked fourth among the nine states that produced fuller's earth in both 1979 and 1980.

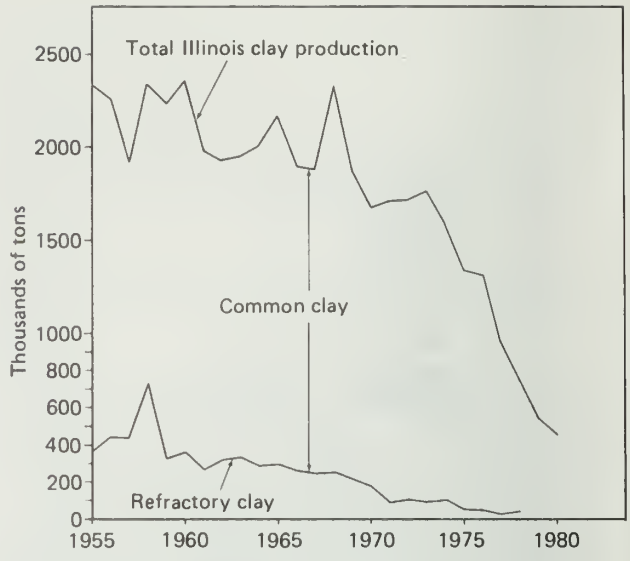

Figure 8. Trends in clay production, 1955-1980

Fluorspar

Production and shipments. In 1842 Illinois began producing fluorspar, the state mineral, and has continued to do so more or less continuously since that time. The Illinois fluorspar industry has continued to be successful because of its easy access to water, rail, and highway transportation.

Illinois retained its position as the leading fluorspar-producing state in both 1979 and 1980; however, shipments declined for the fourth consecutive year. The decline was due to developments in the domestic industry that had little to do with depletion of ore reserves. Similar decreases were shown in the United States shipments of fluorspar (table 20), so that imports furnished about 90 percent of consumption. Of the total fluorspar shipped, 85.6 percent was acid grade (more than 97 percent calcium fluoride content) and 14.4 percent was metallurgical grade (less than 85 percent calcium fluoride). Production figures must be withheld for 1980 and some of the other figures are not

TABLE 20. Fluorspar shipments and consumption, Illinois and United States, 1970-1980

	Shipments (tons)					Consumption (tons)		
	Illinois							
Year	Acid grade	metallurgical grade	Total	United States total	Illinois shipments as percentage of U.S. shipments	Illinois	United States[a]	Illinois consumption as percentage of U.S. consumption
1970	86,729	61,479	148,208	269,221	55.1	89,065	1,372,404	6.49
1971	72,514	65,537	138,051	272,071	50.7	89,971	1,344,742	6.69
1972	75,188	57,217	132,405	250,347	52.9	67,428	1,352,149	4.99
1973	93,062	72,751	165,813	248,601	66.7	86,715	1,351,705	6.42
1974	69,204	84,494	153,698	201,116	76.4	75,115	1,524,532	4.93
1975	50,479	49,419	99,898	139,913	71.4	46,525	1,244,938	3.74
1976	91,803	50,863	142,666	188,270	75.8	44,462	1,273,498	3.49
1977	83,758	47,460	131,218	168,489	77.9	43,742	1,161,136	3.77
1978	71,206	44,653	115,859	129,428	89.5	48,519	1,203,448	4.03
1979	W	W	W	109,299	W	51,672	1,135,451	4.55
1980	W	W	W	92,635	W	31,022	976,644	3.18

[a]Fluorspar consumed includes domestic and foreign material.
W = withheld to avoid disclosing confidential data from individual companies.

Source: U.S. Bureau of Mines.

available yet so table 20 does not contain any of the 1980 data.

All the fluorspar mined in Illinois in 1979 and 1980 came from Hardin and Pope Counties. Fluorspar continued to be mined or processed by three companies: Hastie Mining Company, Ozark-Mahoning Company, and the fluorspar division of Allied Chemical Company (now Inverness Mining Co.).

Ozark-Mahoning Company operated four mines in Hardin and Pope Counties. They maintained a flotation mill, shipping facilities, and two heavy media plants at Rosiclare. Ozark began shaft-sinking at its recently discovered Denton ore body in Hardin County and completed a 1,800-foot crosscut from its Barnett Mine to intersect more ore in the west vein area. Allied Chemical Company operated mines, a heavy media plant, and a flotation mill in Hardin County. In September 1979, mining operations at Allied's mines were suspended pending the sale of these properties. The mines were purchased by Inverness Mining Company, a subsidiary of privately owned Seaforth Mineral and Ore Company of Cleveland, Ohio. Hastie Mining Company, which produces metallurgical gravel spar and construction aggregate, operated several open pits and a small heavy media concentrator near Cave-in-Rock. Hastie's leased the former Victory mine property from Allied and was preparing to begin limited underground mine production.

Consumption. The reported consumption of fluorspar in the United States decreased 5.7 percent, from 1,203,448 tons in 1978 to 1,135,351 tons in 1979. The apparent U.S. consumption (production + imports - exports ± change in stocks) in 1979 totaled 1,090,665 tons, an increase of 2.6 percent over the 1978 level.

Illinois fluorspar consumption in 1979 was 51,672 tons, or 4.6 percent of total U.S. consumption, a 6.5 percent increase from 1978 consumption. Illinois fluorspar is used as a flux in the production of Illinois raw steel, which totaled 11.7 million tons in 1979—down 5.6 percent from the 1978 level. The chemical industry is also a large consumer of fluorspar, using it in the production of hydrofluoric acid and, ultimately, of fluorocarbon gases and plastics, sodium and aluminum fluroides for aluminum production, and other miscellaneous chemicals having a wide variety of additional uses. A disastrous impact on the fluorine chemical industry was expected as a result of the ban on the use of fluorocarbons in aerosols, but the large increase in the use of fluorocarbon refrigerants more than made up the loss. Some decline in fluorspar usage by the steel industry was noted due to a business recession in the automotive and construction industries.

Sand and gravel

Production. Deposits of sand and gravel are widely distributed throughout Illinois. Glacial deposits, chiefly valley trains and outwash plains, are the principal source of commercial sand and gravel. Illinois produced 18.2 million tons of sand (excluding industrial sand) and 21.8 million tons of gravel in 1979 (table 21). Value of 1979 production was a record $87 million, a 4 percent increase over the 1978 level. This increase was due entirely to increase in production.

From the 205 operations producing during 1980, Illinois produced 12.9 million tons of sand (excluding industrial sand) and 14.2 million tons of gravel (table 22), valued at $78.5 million. Because of a decrease in construction activity, production of construction sand and gravel declined 32.3 percent, while value declined 9.8 percent.

In 1979 Illinois dropped to second in the nation in production of industrial sand, producing 5.4 million tons, but regained its first place position in 1980 even though production declined to 4.6 million tons. Two counties, La Salle and Ogle, reported this production. The unit value in 1979 was $8.71 per ton, a 14 percent increase, making the total value of industrial sand $47.2 million (tables 21 and 22).

Sixty-one counties produced sand and gravel in 1980 (fig. 9), with 180 companies mining 205 deposits (as compared with 185 companies mining 217 deposits in

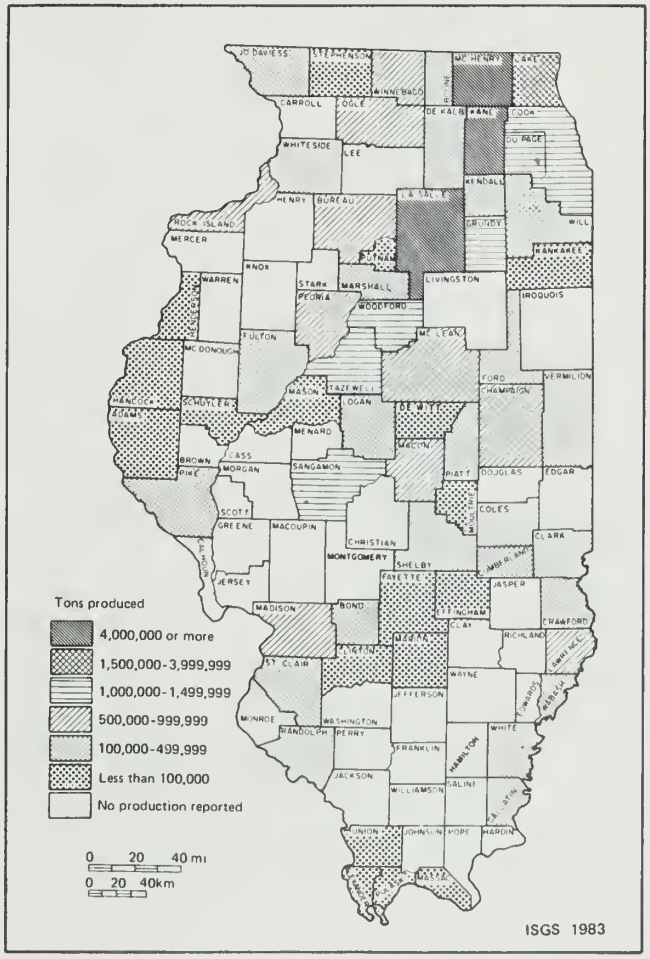

Figure 9. Sand and gravel production, by county, 1980

TABLE 21. Sand and gravel produced and mode of transportation, by county, 1979

County	No. of co.'s	No. of operations	Quantity (1000 tons)				Value ($1000)	Mode of Shipment			
			Sand	Gravel	Industrial sand	Total produced		Truck	Rail	Barge	Not transported
Adams	1	1	W	—	—	W	W	W	—	—	—
Alexander	1	1	W	W	—	W	W	W	—	—	W
Bond	5	5	289	156	—	445	915	445	—	—	—
Boone	2	2	W	W	—	W	419	W	—	—	W
Bureau	6	6	251	294	—	546	1,269	546	—	—	—
Champaign	4	5	399	221	—	620	1,563	W	—	—	W
Clark	3	4	94	297	—	391	992	391	—	—	—
Clinton	2	2	W	W	—	W	W	W	—	—	—
Coles	2	3	W	W	—	W	W	W	—	—	—
Cook	3	3	486	950	—	1,436	3,199	1,436	—	—	—
Crawford	2	2	W	W	—	W	W	W	—	—	—
Cumberland	3	3	118	116	—	234	542	234	—	—	—
DeKalb	3	3	97	45	—	142	387	78	—	—	64
De Witt	1	1	8	69	—	77	262	77	—	—	—
Du Page	3	4	225	975	—	1,200	3,032	1,200	—	—	—
Effingham	1	1	W	—	—	W	W	W	—	—	—
Fayette	2	2	83	44	—	128	187	128	—	—	—
Ford	3	6	W	W	—	333	940	W	—	—	W
Fulton	1	1	116	126	—	242	W	—	—	—	W
Gallatin	1	1	W	W	—	W	W	—	—	W	—
Grundy	1	1	W	—	—	W	W	—	—	W	—
Hancock	1	1	W	W	—	W	W	W	—	—	—
Henderson	1	1	W	—	—	W	W	W	—	—	—
Jo Daviess	1	1	W	W	—	W	W	W	—	—	W
Kane	8	12	1,263	4,777	—	6,039	12,621	W	—	—	W
Kankakee	2	2	15	—	—	15	17	15	—	—	—
Kendall	4	4	234	156	—	390	633	W	—	—	W
Lake	6	6	858	865	—	1,723	2,379	W	—	—	W
La Salle	12	14	W	W	W	5,504	43,896	3,312	2,191	—	—
Lawrence	2	2	W	W	—	W	W	W	—	—	—
Logan	4	4	156	105	—	261	568	W	—	—	W
McHenry	15	17	3,973	5,171	—	9,144	19,238	W	—	—	W
McLean	4	7	299	681	—	980	2,918	W	—	—	W
Macon	2	2	W	W	—	W	2,027	W	—	—	—
Madison	3	3	565	—	—	565	1,019	W	—	W	—
Marion	1	1	W	—	—	W	W	W	—	—	—
Marshall	1	2	W	W	—	W	W	W	—	—	W
Mason	1	1	17	—	—	17	28	17	—	—	—
Massac	1	1	—	W	—	W	W	W	—	—	—
Moultrie	1	1	W	W	—	W	W	W	—	—	—
Ogle	0	1	—	—	W	W	W	W	W	—	—
Peoria	4	5	292	294	—	587	1,166	412	W	W	W
Piatt	2	2	W	W	—	W	319	W	—	—	—
Pike	1	1	W	W	—	W	W	W	—	—	—
Pulaski	1	1	W	—	—	W	W	—	—	W	—
Putnam	1	1	W	W	—	W	W	W	—	—	—
Randolph	1	1	W	—	—	W	W	W	—	—	—
Rock Island	2	3	W	W	—	W	W	W	—	—	—
St. Clair	2	2	W	W	—	W	W	W	—	—	—
Sangamon	4	4	865	214	—	1,079	2,896	985	—	—	93
Schuyler	1	1	W	W	—	W	W	W	—	—	—
Shelby	1	1	W	W	—	W	W	W	—	—	W
Stephenson	3	3	48	21	—	69	173	69	—	—	—
Tazewell	4	12	308	801	—	1,109	3,105	W	—	—	W
Union	1	1	10	—	—	10	W	10	—	—	—
Vermilion	5	5	30	145	—	175	292	W	—	—	W
Wabash	4	4	106	38	—	144	301	144	—	—	—
White	2	2	W	W	—	W	W	W	—	—	W
Whiteside	3	3	215	73	—	288	610	288	—	—	—
Will	9	9	598	1,155	—	1,752	4,208	W	W	—	—
Winnebago	7	9	395	513	—	908	1,568	W	—	—	W
Woodford	7	7	543	726	—	1,269	3,573	W	—	—	W
Concealments			5,269	2,783	5,416	7,628	16,934	28,379	293	1,907	2,734
State Total[a]	185	217	18,222	21,810	5,416	45,448	134,190	38,166	2,484	1,907	2,891

W = withheld included in concealments.

[a] Totals may not add to amounts shown because of independent rounding.

Source: U. S. Bureau of Mines

TABLE 22. Sand and gravel produced and mode of transportation, by county, 1980

County	No. of co.'s	No. of operations	Quantity (1000 tons) Sand	Gravel	Industrial sand	Total produced	Value ($1000)	Mode of Shipment Truck	Rail	Barge	Not transported
Adams	1	1	W	--	--	W	W	W	--	--	--
Alexander	1	1	W	W	--	W	W	W	--	--	--
Bond	5	5	183	129	--	312	892	312	--	--	--
Boone	3	3	W	W	--	163	549	W	--	--	W
Bureau	5	5	183	190	--	373	1,426	373	--	--	--
Champaign	4	5	326	149	--	475	1,266	475	--	--	--
Clark	3	4	188	291	--	479	1,780	479	--	--	--
Clinton	2	2	W	W	--	W	W	W	--	--	--
Coles	2	3	W	W	--	W	W	W	--	--	--
Cook	2	2	W	W	--	W	W	W	--	--	--
Crawford	2	2	W	W	--	W	W	W	--	--	--
Cumberland	3	3	89	87	--	175	705	175	--	--	--
DeKalb	3	3	78	33	--	111	402	W	--	--	W
De Witt	1	1	1	2	--	3	11	3	--	--	--
Du Page	3	4	W	W	--	1,688	3,876	1,688	--	--	--
Effingham	1	1	W	--	--	W	W	W	--	--	--
Fayette	2	2	W	W	--	W	W	W	--	--	--
Ford	3	6	W	W	--	257	918	W	--	--	W
Fulton	1	1	W	W	--	W	W	W	--	--	--
Gallatin	1	1	W	W	--	W	W	W	--	--	--
Grundy	1	1	W	--	--	W	W	W	--	--	--
Hancock	1	1	W	W	--	W	W	W	--	--	--
Henderson	2	2	W	--	--	W	W	W	--	--	--
Jo Daviess	1	1	W	W	--	W	W	W	--	--	--
Kane	7	9	952	3,141	--	4,093	11,052	W	--	--	W
Kankakee	2	2	W	--	--	W	W	W	--	--	--
Kendall	4	4	W	W	--	124	462	89	--	--	34
Lake	5	5	W	W	--	1,331	3,262	W	--	--	W
La Salle	12	13	W	W	W	4,686	41,102	4,686	--	--	--
Lawrence	1	1	W	W	--	W	W	W	--	--	--
Logan	4	4	116	79	--	195	714	195	--	--	--
McHenry	15	16	2,463	3,050	--	5,513	14,365	W	--	--	W
McLean	4	6	243	378	--	621	1,991	621	--	--	--
Macon	2	2	W	W	--	W	W	W	--	--	--
Madison	3	4	W	W	--	652	1,952	W	--	W	--
Marshall	1	2	W	W	--	W	W	W	--	--	--
Mason	1	1	21	--	--	21	39	21	--	--	--
Massac	1	1	--	W	--	W	W	W	--	--	--
Moultrie	1	1	W	W	--	W	W	W	--	--	--
Ogle	2	2	W	W	W	W	W	W	W	--	--
Peoria	3	4	124	108	--	232	671	232	--	--	--
Piatt	2	2	W	W	--	W	415	W	--	--	--
Pike	1	1	W	W	--	W	W	W	--	--	--
Pulaski	1	1	W	W	--	W	W	W	--	--	--
Putnam	2	2	W	W	--	W	W	W	--	--	--
Randolph	1	1	W	--	--	W	W	W	--	--	--
Rock Island	2	3	W	W	--	W	W	W	--	--	--
St. Clair	2	2	W	W	--	W	W	W	--	--	--
Sangamon	4	4	421	142	--	563	2,772	563	--	--	--
Schuyler	1	1	W	W	--	W	W	W	--	--	--
Shelby	1	1	162	33	--	195	422	195	--	--	--
Stephenson	3	3	41	16	--	56	215	56	--	--	--
Tazewell	5	11	333	515	--	849	2,619	842	--	--	8
Union	1	1	8	--	--	8	W	8	--	--	--
Vermilion	4	4	W	W	--	135	401	W	--	--	W
Wabash	4	4	65	31	--	96	291	96	--	--	--
White	2	2	W	W	--	W	W	W	--	--	--
Whiteside	3	3	161	55	--	216	794	216	--	--	--
Will	7	7	370	335	--	705	2,209	705	--	--	--
Winnebago	6	8	219	461	--	680	1,995	W	--	--	W
Woodford	7	7	343	570	--	913	3,248	913	--	--	--
Concealments			5,852	4,363	4,631	5,808	19,518	17,640	W[a]	W[a]	W[a]
State Total[b]	180	205	12,939	14,155	4,631	31,725	122,332	30,583	1,146[a]	a	a

[a] Rail, barge and not transported added together to conceal individual company data.
[b] Totals may not add to amounts shown because of independent rounding.
W = withheld included in concealments

Source: U.S. Bureau of Mines.

1979). Total sand and gravel production decreased by 13.7 million tons or 30.2 percent from the 1979 level (fig. 10). The size of the operations is shown in table 23.

Transportation. Sand and gravel usually are not shipped farther than 50 miles from the pit; therefore, approximately 84.5 percent of the total shipments were by truck; barge, 4.2 percent; railroad, 5.5 percent; and 5.8 percent not transported in 1979 (table 21). Approximately 96.4 percent of the total shipments were by truck in 1980 (table 22). Barge and railroad shipments cannot be revealed for 1980.

Consumption and uses. Construction aggregate is the primary use of common sand and gravel produced in Illinois. In 1979 commercial, government, and contractor operations used 40 million tons of common sand and gravel valued at $87 million; in 1980 they used 27.1 million tons valued at $78.5 million. This represents a decrease of 32.3 percent in quantity, but only a 9.8 percent decrease in value. In 1980 a total of 12.6 million tons (46.4 percent) was used for building construction, a decrease of 30.8 percent; 10.9 million tons (40.2 percent) for paving, a 32.6 percent decrease; and 3.4 million tons (12.7 percent) for fill and other uses, a 36.6 percent decrease (table 24).

Industrial silica sand was produced in 1979 and 1980 in ground and unground form. Unground sand was used primarily for glass manufacturing; molding, blasting, grinding, and polishing sand; railroad traction sand; filtration sand; and propant sand for hydrofracturing of oil wells. Ground sand was used in chemicals, abrasives, enamels, pottery, porcelain, tile, and various fillers.

Stone

Production. Illinois stone production (excluding dimension stone) decreased from 63.6 million tons in 1979 to 53.3 million tons in 1980, a 16.1 percent loss. The total value decreased to $180.7 million, with the unit value rising from $2.96 per ton in 1979 to $3.39 in 1980.

Of the 63.6 million tons of crushed and broken stone produced in 1979, 40.1 million tons were limestone and 23.5 million tons were dolomite (table 25). The U.S. Bureau of Mines furnishes us with total crushed and broken stone figures only and no longer breaks it down into sep-

TABLE 23. Illinois sand and gravel production, by size of operation, 1979 and 1980

Size of operation (tons per year)	1979 Number of operations	1979 Production (1000 tons)	1979 Percentage of commercial production	1980 Number of operations	1980 Production (1000 tons)	1980 Percentage of commercial production
less than 25,000	50	518,105	1.1	61	689,421	2.2
25,000 to 49,999	26	920,852	2.0	27	1,027,699	3.2
50,000 to 99,999	38	2,725,624	6.0	31	2,209,006	7.0
100,000 to 199,999	43	6,476,938	14.3	50	7,161,363	22.6
200,000 to 299,999	22	5,310,823	11.7	12	2,943,074	9.3
300,000 to 399,999	12	4,111,897	9.0	6	2,003,423	6.3
400,000 to 499,999 500,000 to 599,999	4 1 } *	2,231,711	4.9	1 3 } *	2,076,524	6.5
600,000 to 699,999 700,000 to 799,999	4 4 } *	5,603,409	12.3	3 2 } *	3,480,219	11.0
800,000 to 899,999 900,000 to 999,999	1 3 } *	3,662,446	8.1	2 1 } *	2,695,375	8.5
1,000,000 and over	9	13,886,518	30.6	6	7,438,871	23.4
Total	217	45,448,323	100.0	205	31,724,975	100.0

*Mine sizes must be combined to avoid disclosing confidential data.
Source: U.S. Bureau of Mines.

TABLE 24. Illinois sand and gravel sold or used by producer, by class of operation and use, 1979 and 1980[a]

Class of operation and use	1979 Quantity (1000 tons)	1979 Value ($1000)	1980 Quantity (1000 tons)	1980 Value ($1000)	Change in quantity from 1979 to 1980 (%)	Change in value from 1979 to 1980 (%)
Construction aggregates						
Sand and gravel						
Commercial operations[a]						
Building	18,145	42,033	12,565	35,599	- 30.8	- 15.3
Paving	16,131	35,371	10,880	33,094	- 32.6	- 6.4
Fill	5,403	8,710	3,452	8,873	- 36.1	+ 1.9
Other uses[b]	354	902	197	944	- 44.4	+ 4.7
Total[c]	40,033	87,016	27,094	78,510	- 32.3	- 9.8
Industrial sand						
Blast	--[e]	--[e]	--[e]	--[e]		
Molding	1,233	9,866	1,373	13,378	+ 11.4	+ 35.6
Glass	2,204	12,442	2,087	15,416	- 5.3	+ 23.9
Other uses[d]	1,979	24,866	1,172	15,028	- 40.8	- 39.6
Total[c]	5,416	47,174	4,631	43,822	- 14.5	- 7.1
Total sand and gravel[c]	45,448	134,190	31,725	122,332	- 30.2	- 8.8

[a] Separate figures not available for commerical and government operations.
[b] Includes railroad ballast.
[c] Numbers are rounded and totals may not necessarily add up.
[d] Includes engine, filtration, foundry use, grinding and polishing, oil hydrofrac, pottery, abrasives, chemicals, enamel, and other uses.
[e] Included with other uses to conceal for 1979 and 1980.

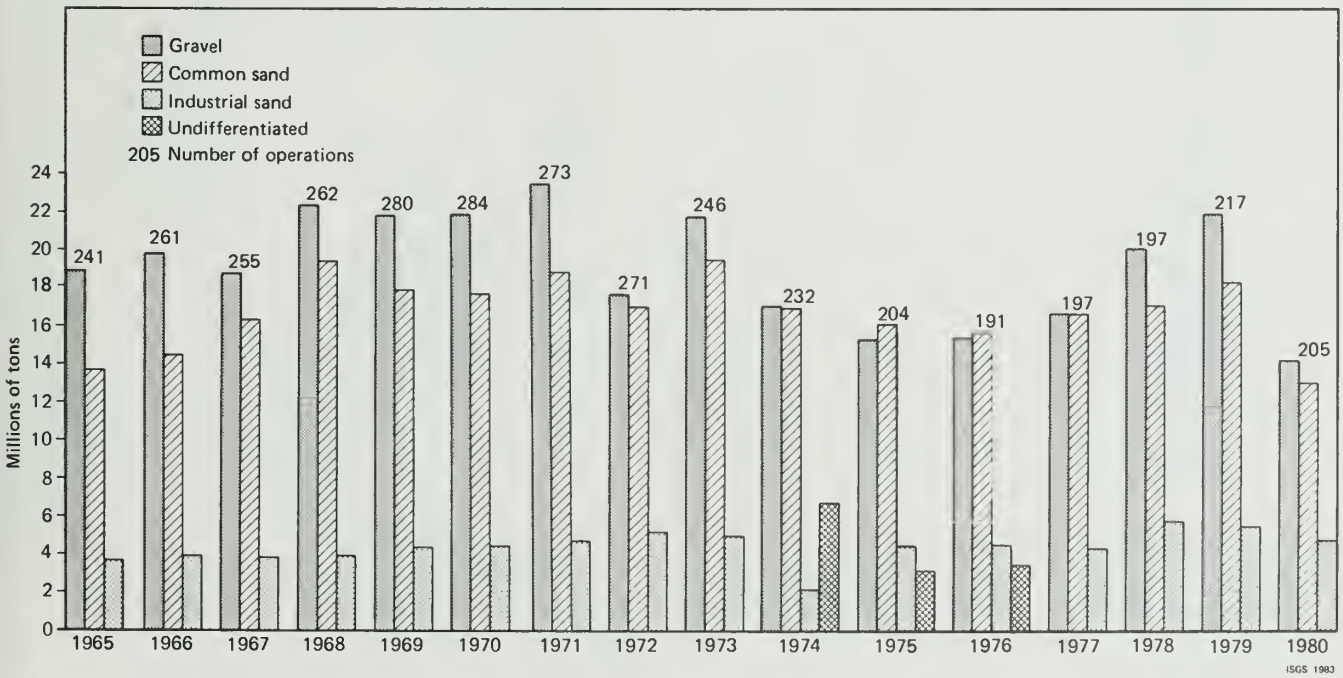

Figure 10. Trends in production of sand and gravel, 1965-1980

TABLE 25. Production and value of Illinois stone, by county and mode of transportation, 1979

County	No. of quarries	Crushed and broken (1000 tons)		Production		Mode of transportation (1000 tons)			
		Limestone	Dolomite	Quantity (1000 tons)	Value ($1000)	Truck	Rail	Barge	Unspecified
Adams	7	1,003	—	1,003	9,202	610	373	20	—
Boone	2	—	W	W	W	W	—	—	—
Brown	2	W	—	W	W	W	—	—	—
Calhoun	1	21	—	21	45	21	—	—	—
Carroll	9	434	—	434	1,064	434	—	—	—
Christian	1	426	—	426	1,379	426	—	—	—
Clark	2	W	—	W	W	W	—	—	—
Clay	1	180	—	180	757	180	—	—	—
Clinton	1	113	—	113	245	113	—	—	—
Coles	1	W	—	W	W	W	—	—	—
Cook	3	—	W	W	W	W	W	—	—
De Kalb	2	W	W	W	W	W	—	—	—
Douglas	1	W	—	W	W	W	—	—	—
Du Page	1	—	450	450	1,457	450	—	—	—
Fayette	1	W	—	W	751	W	—	—	—
Greene	3	W	—	W	W	W	—	—	—
Hancock	3	357	—	357	1,003	357	—	—	—
Hardin	5	2,948	—	2,948	6,636	1,531	—	1,417	—
Henderson	4	365	—	365	1,205	365	—	—	—
Henry	1	397	—	397	1,449	397	—	—	—
Jackson	2	W	—	W	W	W	—	—	—
Jersey	2	105	—	105	333	105	—	—	—
Jo Daviess	14	W	W	466	848	466	—	—	—
Johnson	4	1,430	—	1,430	2,990	1,328	102	—	—
Kane	4	1,411	—	1,411	3,956	1,411	—	—	—
Kankakee	3	W	W	1,476	5,100	W	W	—	—
Kendall	1	—	W	W	W	W	—	—	—
Lake	2	15	—	15	32	15	—	—	—
La Salle	5	2,272	—	2,272	6,388	2,272	—	—	—
Lee	10	1,307	101	1,409	3,208	1,409	—	—	—
Livingston	5	1,740	—	1,740	6,964	1,740	—	—	—
Logan	1	W	—	W	W	W	—	—	—
McDonough	2	W	—	W	W	W	—	—	—
Macon	1	*	—	*	1	*	—	—	—
Madison	3	1,206	—	1,206	3,854	1,206	—	—	—
Menard	1	W	—	W	W	W	—	—	—
Mercer	1	150	—	150	236	150	—	—	—
Monroe	2	W	—	W	W	W	W	—	W**
Montgomery	4	1,801	—	1,801	5,444	1,801	—	—	—
Ogle	14	582	120	702	1,879	702	—	—	—
Peoria	1	199	—	199	700	199	—	—	—
Pike	5	640	—	640	2,079	625	15	—	—
Pulaski	2	W	—	W	W	W	W	—	—
Randolph	2	W	—	W	W	W	—	—	—
Rock Island	4	1,380	—	1,380	4,977	1,380	—	—	—
St. Clair	4	2,739	—	2,739	7,089	2,739	—	—	—
Schuyler	1	W	—	W	W	W	—	—	—
Scott	1	W	—	W	W	W	—	—	—
Shelby	1	53	—	53	164	53	—	—	—
Stephenson	10	376	—	376	928	376	—	—	—
Union	3	1,759	—	1,759	4,687	1,759	—	—	—
Vermilion	1	W	—	W	W	W	—	—	—
Warren	3	1,001	—	1,001	3,122	1,001	—	—	—
Washington	1	149	—	149	W	149	—	—	—
Whiteside	5	W	—	W	W	W	—	—	—
Will	7	W	W	6,480	17,768	3,907	274	2,300	—
Williamson	1	10	—	10	27	10	—	—	—
Winnebago	17	W	W	932	1,812	932	—	—	—
Various	1	689	—	689	1,733	689	—	—	—
Concealments	—	12,793	22,830	26,268	76,618	26,241	1,503	—	**
TOTALS	202	40,050	23,502	63,551	188,130	57,548	2,267	3,737	**

*Only 176 tons.
**Included with rail to avoid disclosing individual company figures.
W = withheld to avoid disclosing confidential data of individual companies, included in total.
Source: U.S. Bureau of Mines.

arate limestone and dolomite categories. Table 26 shows that Illinois produced 53.3 million tons of crushed stone in 1980. In addition to crushed and broken stone, a small amount of dimension stone (stone quarried and prepared in blocks to specifications) was produced at one quarry in Kane County. According to the U.S. Bureau of Mines, 3,000 tons of dimension stone valued at $128,000 were produced in Illinois by the Fox River Stone Company in 1979; in 1980 they produced 2,238 tons valued at $103,312.

In 1980, 56 Illinois counties (two less than in 1979) reported stone production, as shown in figure 11. One hundred ninety-six limestone and dolomite quarries were operating in 1980 as compared to 202 in 1979 and 325 in 1975 (the record high). Ninety-three quarries produced less than 100,000 tons per year in 1980 as compared with 99 quarries in 1979. The number of quarries producing between 100,000 and 500,000 tons per year increased slightly, from 74 in 1979 to 76 in 1980. The number of quarries producing more than 500,000 tons per year decreased from 29 in 1979 to 27 in 1980. Table 27 shows the size of Illinois stone production operations.

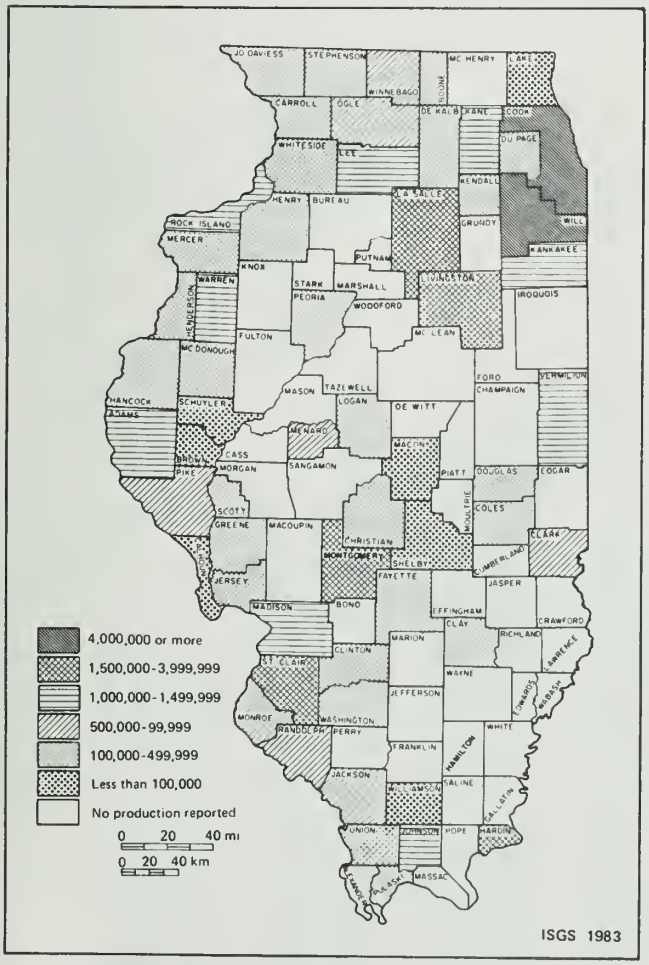

Figure 11. Stone production, by county, 1980

TABLE 26. Production and value of Illinois stone, by county and mode of transportation, 1980

County	No. of quarries	Crushed and broken: Production (1000 tons)	Crushed and broken: Value ($1000)	Mode of transportation (1000 tons): Truck	Rail	Barge
Adams	8	985	10,340	605	345	35
Boone	2	W	W	W	-	-
Brown	2	182	738	182	-	-
Bureau	1	40	109	40	-	-
Calhoun	1	37	87	37	-	-
Carroll	10	336	970	336	-	-
Christian	1	W	W	W	-	-
Clark	2	W	W	W	-	-
Clay	1	264	1,078	264	-	-
Clinton	1	99	230	99	-	-
Coles	1	W	W	W	-	-
Cook	3	W	W	W	W	-
De Kalb	2	W	W	W	-	-
Douglas	1	W	W	W	-	-
Du Page	1	428	1,495	428	-	-
Fayette	1	W	W	W	-	-
Greene	3	W	W	W	-	-
Hancock	5	615	1,733	615	-	-
Hardin	5	2,308	5,850	2,302	-	6
Henderson	1	W	W	W	-	-
Henry	1	460	1,877	460	-	-
Jackson	2	W	W	W	-	-
Jersey	2	95	W	95	-	-
Jo Daviess	14	375	775	375	-	-
Johnson	2	W	W	W	W	-
Kane	3	1,083	3,352	1,083	-	-
Kankakee	3	W	W	W	W	-
Kendall	2	W	W	W	-	-
La Salle	5	2,265	6,668	2,265	-	-
Lee	9	1,165	3,787	1,165	-	-
Livingston	5	W	W	W	-	-
Logan	1	W	W	W	-	-
McDonough	2	W	W	W	-	-
Madison	3	830	2,828	830	-	-
Menard	1	W	W	W	-	-
Mercer	1	183	296	183	-	-
Monroe	2	W	W	W	W	-
Montgomery	4	1,221	4,058	1,221	-	-
Ogle	14	859	2,604	859	-	-
Peoria	1	169	633	169	-	-
Pike	6	618	2,151	618	-	-
Pulaski	1	W	W	W	W	-
Randolph	2	W	W	W	-	-
Rock Island	4	1,405	5,527	1,405	-	-
St. Clair	4	2,412	7,112	2,412	-	-
Schuyler	1	W	W	W	-	-
Scott	1	W	W	W	-	-
Shelby	1	35	117	35	-	-
Stephenson	11	354	1,001	354	-	-
Union	2	W	W	W	-	-
Vermilion	1	W	W	W	-	-
Warren	3	W	W	W	-	-
Washington	1	W	W	W	-	-
Whiteside	4	439	1,233	439	-	-
Will	7	4,960	15,645	2,974	180	1,806
Winnebsgo	18	799	1,881	799	-	-
Concealmenta		28,286	96,482	27,287	999	-
Totsls[S]	196	53,307	180,657	49,936	1,524	1,847

[S] May not sdd to totsl due to independent rounding.
W = Withheld to avoid disclosing confidential data of individual companiea, included in total.

Source: U.S. Buresu of Minea.

Shipments. About 90 percent of Illinois stone is shipped by truck due to the short distance it is hauled. Shipments of stone, a bulk commondity, are confined primarily to areas near the quarry. Illinois waterways are put to good use by some producers in Will and Hardin Counties. About 40 percent of the stone from these two counties in 1979 was shipped by water, but barge shipment from Hardin County in 1980 was minimal. As shown in tables 25 and 26, 90.6 percent (57.5 million tons) of the state's total production of 63.6 million tons was shipped by truck in 1979 and 93.7 percent (49.9 million tons) in 1980. Other modes of shipment included rail, 2.8 percent (1.8 million tons) in 1979 and 2.9 percent (1.5 million tons) in 1980; and barge, 5.9 percent (3.7 million tons) in 1979 and 3.5 percent (1.8 million tons) in 1980.

Consumption and uses. Specific uses of stone produced in Illinois are shown in table 28. Stone produced in Illinois is sold for construction aggregate, for agricultural purposes, and for industrial and chemical use (fig. 12).

In 1979, 63.6 million tons of stone were produced in Illinois, and 53.3 million tons in 1980. Of this, 50.9 million tons (80 percent) in 1979 and 41.2 million tons (77.4 percent) in 1980 were used for construction aggregate. Of the total construction aggregate 39.2 percent in 1979 and 40.3 percent in 1980 was used for road base stone; 17.2 percent in 1979 and 17.5 percent in 1980 for concrete aggregate; 8.7 percent in 1979 and 8.6 percent in 1980 for surface treatment aggregate; 14.2 percent in 1979 and 13.9 percent in 1980 for bituminous aggregate; 5.3 percent in 1979 and 5.1 percent in 1980 for macadam aggregate; and 15.4 percent in 1979 and 14.6 percent in 1980 for unspecified construction aggregate (table 28).

In 1979 Illinois used 5.4 million tons of stone—chiefly limestone—for agricultural purposes, compared to 5.3 million tons in 1980. According to the National Lime Association, Illinois ranked among the top states in consumption of limestone for agricultural purposes, and has become a fairly large producer of ground limestone primarily to supply this large market.

Illinois used 7.2 million tons of stone (11.5 percent of the 1979 total) for industrial, chemical, and other uses and 6.7 million tons in 1980. High calcium limestone, usually containing more than 95 percent CaO, was used in the manufacture of cement and in the manufacture of iron and steel (as flux-stone), for rock-dusting in mines, as fillers, and in various chemical industries.

Forty percent of the dimension stone mined was used

TABLE 27. Illinois stone production by size of operation, 1979 and 1980

Size of operation (tons per year)	1979			1980		
	Number of quarries	production[a] (tons)	Percentage of total	Number of quarries	production[a] (tons)	Percentage of total
less than 25,000	55	612,580	1.0	52	528,158	1.0
25,000 to 49,999	22	808,058	1.3	22	750,102	1.4
50,000 to 74,999	15	979,698	1.5	11	677,189	1.3
75,000 to 99,999	7	603,301	0.9	8	695,132	1.3
100,000 to 199,999	29	4,488,546	7.1	41	6,103,933	11.4
200,000 to 299,999	23	5,698,188	9.0	16	4,247,844	8.0
300,000 to 399,999	13	4,555,039	7.2	9	2,960,998	5.6
400,000 to 499,999	9	3,849,166	6.0	10	4,363,265	8.2
500,000 to 599,999	4	2,202,706	3.5	9	5,021,956	9.4
600,000 to 699,999	7	4,661,153	7.3	6	3,851,257	7.2
700,000 to 799,999	3	2,351,127	3.7	3	2,273,503	4.3
800,000 to 899,999	4	3,378,751	5.3	2	1,658,968	3.1
900,000 and over	11	29,366,106	46.2	7	20,179,242	37.8
Total	202	63,554,419	100.0	196	53,311,547	100.0

[a]Excludes dimension stone

Source: U.S. Bureau of Mines

TABLE 28. Use of crushed and broken stone produced in Illinois, 1979 and 1980

Use	1979 Total (tons)	1979 Percentage of total	1979 Percentage of change from 1978	1979 Average value per ton	1980 Total (tons)	1980 Percentage of total	1980 Percentage of change from 1979	1980 Average value per ton
Road base stone	19,909,253	31.3	+ 17.7	2.89	16,605,258	31.1	- 16.6	3.22
Concrete aggregate	8,719,696	13.7	- 2.7	3.01	7,232,633	13.6	- 17.1	3.39
Surface treatment aggregate	4,446,601	7.0	+ 6.7	2.94	3,549,908	6.7	- 20.2	3.28
Bituminous aggregate	7,239,994	11.4	+ 8.9	2.93	5,727,594	10.7	- 20.9	3.49
Unspecified construction	7,824,076	12.3	- 26.4	2.59	6,022,262	11.3	- 23.0	3.02
Agricultural purposes[a]	5,400,445	8.5	+ 6.6	3.32	5,334,921	10.0	- 1.2	3.65
Cement	3,279,867	5.2	+ 2.8	2.08	2,596,591	4.9	- 20.8	2.49
Macadam aggregate	2,713,866	4.3	- 2.7	2.98	2,109,289	3.9	- 22.3	3.22
Flux stone	862,004	1.4	W	2.96	585,549	1.1	- 32.1	3.40
Riprap and jetty	534,183	0.8	- 11.0	2.96	631,249	1.2	+ 18.2	3.13
Railroad ballast	509,158	0.8	- 36.4	2.77	857,161	1.6	+ 68.3	3.07
Other uses[b]	2,112,276	3.3	- 10.9	5.50	2,056,894	3.9	- 2.6	6.59
Total	63,551,419	100.0	+ 1.8	2.96	53,309,309	100.0	- 16.1	3.39

[a] Includes agricultural limestone and poultry grit.
[b] Includes stone for asphalt filler, chemicals, lime manufacture, mine dusting, filler, roofing aggregate, fill, waste material, whiting, and other uses.
W = withheld to avoid disclosing confidential data of individual companies; included in total.

Source: U.S. Bureau of Mines.

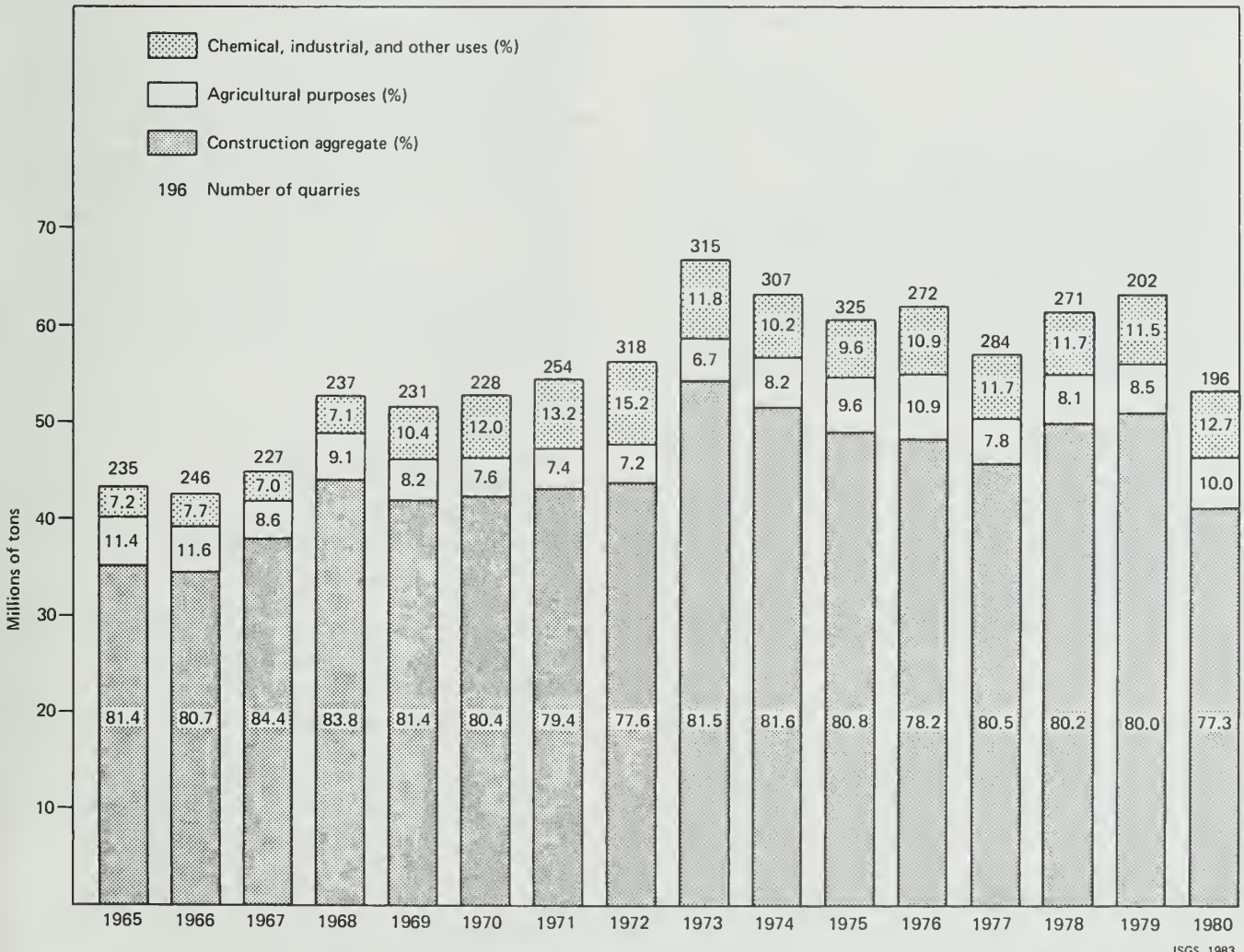

Figure 12. Trends in uses of crushed and broken stone produced in Illinois, 1965-1980

as veneer in house construction in Illinois. Rubble accounted for 33 percent and flagging for 27 percent of the dimension stone in both 1979 and 1980.

Tripoli (amorphous silica)

Production. The term "tripoli" refers to several fine-grained, porous, siliceous materials mined in four states. Crude and finished materials are produced in Arkansas and Oklahoma and finished material in Missouri; amorphous, or soft silica is mined in Illinois; mined and processed rottenstone (decomposed fine-grained siliceous limestone or shale) in Pennsylvania. Illinois has been the nation's largest producer of these siliceous materials in recent years, accounting for more than half of the total U.S. production again in 1979 and 1980.

In 1980, amorphous silica was produced from two mines in Alexander County by two companies—Illinois Minerals Company and Tammsco Inc. In 1980, 18.8 percent more tripoli was produced than in 1979. Most Illinois tripoli was processed in the state.

Consumption and uses. The amorphous silica processed in Illinois was used for abrasives and filler. The quantity of prepared materials sold in 1980 was 19.1 percent more than in 1979.

METALS

Zinc, lead, silver, and germanium

Production. The metals recovered from ore mined in Illinois during 1979 and 1980—zinc, lead, silver, and germanium—were recovered from fluorspar ore mined in Hardin and Pope Counties by the Allied Chemical Company and the Ozark-Mahoning Company in 1979 and in 1980 by Ozark-Mahoning Company and Inverness Mining Company, a subsidiary of Seaforth Mineral and Ore Company of Cleveland, Ohio, which purchased the Illinois fluorspar holdings of Allied Chemical Company. Zinc production declined 14.3 percent in 1979, and another 14 percent in 1980, while value increased 13.6 percent in 1979 and decreased 13.7 percent in 1980. Lead production decreased 20.7 percent in 1979 and another 26 percent in 1980; value increased 36.7 percent in 1979, but decreased 40.4 percent in 1980. Silver production decreased 5.8 percent in 1979 and 50 percent more in 1980, but value increased 109 percent in 1979 and another 8.7 percent in 1980. The price of silver advanced sharply as a result of strong speculative interest in silver metal as a hedge against rising inflation and the declining value of the dollar. Germanium has been produced intermittently over the last few years in small amounts. Production data are not available for germanium, and actual production figures for zinc, lead, and silver are withheld to avoid disclosing individual company data.

OTHER MINERALS

Peat

Although peat is classified as a fuel by the U.S. Bureau of Mines, virtually all commercial sales of peat in the United States (excluding imports) are for agricultural and horticultural purposes, specifically, for soil improvement. Three major kinds of peat—reed-sedge, moss, and peat humus—were produced in Illinois.

Illinois continued to rank third, after Michigan and Florida, among the 22 peat-producing states and accounted for 10.1 percent of the nation's total peat production and 9.3 percent of its value. Five companies' operating plants produced 80,913 tons of peat and sold 79,415 tons, valued at $1,504,567 (table 29). Peat production, decreasing 7.2 percent during 1980, was reported in Cook, Lake, and Whiteside Counties.

TABLE 29. Production and commercial sales of peat in Illinois, 1972-1980

Year	Number of plants	Production (tons)	Commercial sales (tons)	Value ($)	Average value per ton ($)	Illinois production[a] (%)
1972	5	69,523	74,003	W	W	12.06
1973	6	71,552	71,551	1,037,000	14.49	11.28
1974	6	95,807	95,807	1,412,000	14.74	13.11
1975	6	96,295	95,719	1,511,401	15.79	12.48
1976	4	84,662	87,087	763,000	8.76	8.73
1977	6	80,355	82,356	1,477,595	17.94	10.24
1978	4	86,000	84,310	1,594,000	18.91	10.46
1979	5	87,209	85,544	1,610,084	19.12	10.57
1980	5	80,913	79,415	1,504,567	18.95	10.12

[a] Illinois production as percentage of U.S. production.
W = Withheld to avoid disclosing data from individual companies.

Source: U.S. Bureau of Mines.

Gemstones
Gemstones, limited to specimen grade fluorite collected in the fluorspar mines in Illinois, contributed little to the total value of mineral production. The estimated value of gemstones was $15,000 for both 1979 and 1980.

Primary barite
A by-product of the fluorspar industry, barite has been recovered in minor amounts as an accessory mineral from fluorspar mining operations at mines in Hardin County since 1974. The tons of primary barite produced and its value increased in 1979 and again in 1980. Allied Chemical Company, with two mines, and Ozark-Mahoning, operating various mines, produced primary barite in 1979. In 1980 Allied's holdings were bought by Inverness Mining Company. They reported production along with Ozark-Mahoning operating various mines. Barite is used primarily as a weighting agent in drilling muds, and is also used in the manufacture of paints, glass, and rubber, and in the production of barium chemicals.

MINERAL MATERIALS PROCESSED

Mineral materials produced mainly in other states and foreign countries but processed in Illinois in 1979 and 1980 included ground barite, bismuth, columbium and tantalum, calcined gypsum, crude iodine, iron oxide pigments, natural gas liquids, expanded perlite, pig iron, sulfur, exfoliated vermiculite, primary slab zinc, and secondary slab zinc.

Ground barite
The Mineral Pigments and Metals Division of Pfizer, Inc. in East St. Louis (St. Clair County), Ozark-Mahoning Company and Allied Chemical Company (both in Hardin County) produced ground barite in 1979; in 1980 Pfizer and Ozark-Mahoning along with Inverness Mining Company were the producers. Production and value increased by 35.2 and 5.6 percent, respectively, in 1979 and 4.3 and 40.7 percent in 1980. The ground barite produced in Illinois is used almost exclusively as a filler or an extender in paint.

Bismuth
United Refining and Smelting Company, Franklin Park, Cook County, recovered a small quantity of bismuth by recycling secondary material in 1979; however, in 1980 they ceased operating after many years as a recycler of bismuth scrap material. Bismuth is used in fusible alloys, in pharmaceutical chemical applications, and as a metallurgical additive. Refinery production statistics are withheld to avoid disclosing company proprietary data.

Columbium and tantalum
Processing of columbium-tantalum concentrate imported from foreign countries was reported by Fansteel, Inc. of Chicago. Fansteel produced columbium, tantalum metal, and tantalum carbide. They also expanded their wire- and tube-making equipment at the North Chicago plant. Columbium and tantalum are used primarily in the production of various steel alloys. Production figures are not available.

Calcined gypsum
National Gypsum Company (Lake County) imported calcined gypsum from out-of-state to its Waukegan plant for use in wallboard. In 1979, the quantity of gypsum calcined was 7.9 percent less, and the value 3.6 percent higher, than in 1978. In 1980 the quantity decreased 39.5 percent and value decreased 24.5 percent.

Crude iodine
Crude iodine was processed for commercial use at three plants in 1979 and 1980: Abbott Laboratories in North Chicago, Lake County, Economics Laboratory, Inc. in Joliet, Will County, and Morton-Norwich in Ringwood, McHenry County. Organic and inorganic compounds were produced. Iodine is used primarily as a catalyst or stabilizer, or in animal feed, inks, colorants, pharmaceuticals, and sanitary and industrial disinfectants.

Iron oxide pigments
Illinois plants processed 41,414 tons of iron oxide pigments valued at $22.4 million in 1979, an increase of 25.9 percent in quantity and 16.8 percent in value from 1978. In 1980 production decreased 12.4 percent to 36,267 short tons valued at $23,843. Finished pigments were produced from iron ore imported from other states by the Prince Manufacturing Company of Quincy in Adams County; the George B. Smith Chemical Works of Maple Park in Kane County; Pfizer, Inc., of East St. Louis in St. Clair County; and Solomon Grinding Service of Springfield in Sangamon County.

Natural gas liquids
Natural gas liquids include ethane, propane, isobutane, unsplit butane, and a combination of gasoline and liquefied petroleum gas (LPG). Natural gas liquids were processed in 1979 and 1980 in Douglas County at the Tuscola plant of the United States Industrial Chemical Company, a division of National Distillers and Chemical Corporation.

Expanded perlite
Crude perlite mined outside the state was processed by Silbrico Corporation in Cook County; Mica Pellets, Inc., in De Kalb County; Filter Products Corporation and National Gypsum Company, both in Lake County; and Johns-Manville Sales Corporation in Will County. Expanded perlite is used primarily as an aggregate for concrete and plaster, for horticultural aggregate, for roof insulating board, for low-temperature insulation, and for aid in filtering. Illinois maintained its leadership in 1979 in production

and value of expanded perlite; however, production decreased by 16.1 percent and value by 5.9 percent. In 1980 production and value decreased for a second year, production by 20.5 percent and value by 26.7 percent. This decrease was due primarily to the depressed construction industry.

Pig iron and raw steel

During 1979, 6.2 million tons of pig iron valued at $1,203.8 million were produced in 12 blast furnaces in Illinois, a decrease of 11 percent in production and an increase of 4 percent in value from the 1978 levels. Illinois ranked fifth among the 14 states producing pig iron in both 1979 and 1980. In 1980 production decreased by 29 percent to 4.4 million tons with a value of $849.3 million, a decline of 29.4 percent. The depressed auto market and increased foreign imports contributed to the decline. Four of the five Illinois steel plants are located in Cook County—Interlake Steel Company, Wisconsin Steel Division of Envirodyne Industries, Inc., United States Steel Corporation, and Republic Steel Corporation. The fifth plant, Granite City Steel Division of National Steel Corporation, is in Madison County.

Wisconsin Steel shut down its Chicago plant on March 28, 1981 in bankruptcy action and the court ordered the plant and equipment to be sold at public auction.

Republic Steel Corporation completed the first full year of operation of its two 225-ton bottom-blown basic-oxygen-process (Q-BOP) furnaces at its South Chicago works in 1978. In August 1980 several hundred workers were idle while repairs were made on its blooming mill. The shutdown forced suspension of iron production from the mill's blast furnace, and steel production from the Q-BOP and three electric furnaces. United States Steel Corporation closed an ingot mold foundry at Chicago. A $60 million improvement program was begun by National Steel at its Granite City Steel Division.

According to the American Iron and Steel Institute in Washington, D.C., 11.7 million tons of raw steel (8.6 percent of the United States output) were produced in Illinois in 1979, a decrease of 29.7 percent from the 1978 level of 12.4 million tons. In 1980, 9 million tons of raw steel were produced (8.1 percent of the United States output), a decrease of 23 percent from 1979.

Slag (iron and steel)

Illinois ranked fifth in 1979, and in 1980 dropped to seventh as one of the nation's leading slag producers. Four companies produced steel slag and two companies produced air-cooled blast furnace slag. Primary use was for construction aggregate. Output declined 48 percent, and value, 30 percent from 1979 to 1980.

Recovered elemental sulfur

Elemental sulfur was recovered in seven counties by six companies operating eight plants: Union Oil Company of California at its Chicago plant in Cook County; Marathon Oil Company at its Robinson refinery in Crawford County; Natural Gas Pipeline Company of America at its St. Elmo plant in Fayette County and its Herscher plant in Kankakee County; Texaco, Inc. at its Lawrenceville plant in Lawrence County and its Lockport plant in Will County; Shell Oil Company at its Hartford plant in Madison County; and Mobil Oil Corporation at its Joliet refinery in Will County.

The amount of sulfur recovered as a byproduct of oil refinery operations was 196,000 tons, valued at $8.3 million in 1979, and in 1980 was 208,000 tons, valued at $12.5 million. Illinois ranked sixth in the nation in quantity of elemental sulfur recovered and seventh in value of shipments.

Exfoliated vermiculite

Crude vermiculite mined outside the state was processed by the Construction Products Division of W. R. Grace and Company in West Chicago, Du Page County; by Mica Pellets, Inc. in De Kalb, De Kalb County; and by the International Vermiculite Company in Girard, Macoupin County. Exfoliated vermiculite was processed from raw material imported from out of state and 25.5 percent in 1979 and 25.9 percent in 1980 of the product was used for loose-fill insulation, 25.5 percent in 1979 and 17.9 percent in 1980 for block insulation, 11.5 percent in 1979 and 10.8 percent in 1980 for concrete aggregate, and 22.9 percent in 1979 and 25.1 percent in 1980 for horticultural and agricultural purposes. Plaster aggregates, steel mills, and fireproofing uses accounted for the remaining 14.6 percent in 1979 and 10.8 percent in 1980. The quantity and value of exfoliated vermiculite processed in 1979 increased by 11 percent and 14.1 percent, respectively, and decreased 18.1 percent in quantity and 11.7 percent in value in 1980.

Primary slab zinc

Six states, including Illinois, accounted for the smelter production of primary slab zinc in 1979 and 1980. AMAX Zinc Company, Inc. in Sauget, St. Clair County, processed special high-grade zinc from domestic and foreign ores and concentrates. Their production in 1979 was 58,315 metric tons (5.5 percent more than 1978 production) and 62,608 metric tons in 1980 (7.4 percent more than in 1979).

Secondary slab zinc

During 1979 and 1980, secondary slab zinc was produced by Illinois Smelting and Refining Company in Chicago (Cook County) and in 1980 another plant was also in operation, the New Jersey Zinc Company in Depue (Bureau County). Production data are not available.

MINERAL PRODUCTS MANUFACTURED

Mineral products manufactured in Illinois in 1979 from crude mineral materials mined in Illinois and elsewhere included cement, clay products, coke, glass, and lime. Available data are given in the next sections.

Cement

Production. In 1979, 1,998,317 tons of finished portland cement were manufactured in Illinois, a 5.9 percent decrease from 1978 production; in 1980, 1,767,582 tons were manufactured, an 11.5 percent decrease from 1979. Prepared masonry production decreased 14.4 percent in 1979 and 80.3 percent in 1980; however, since there were only two producers in both 1979 and 1980, production data are withheld. Four companies produced cement in Illinois: Centex Corporation at La Salle, La Salle County; Gulf & Western Cement Manufacturing Company at Oglesby, La Salle County; Medusa Corporation at Dixon, Lee County; and Missouri Portland Cement Company at Joppa, Massac County. The Medusa Corporation, a subsidiary of Crane Company, announced the sale of its Dixon, Illinois cement plant to Lone Star Industries, Inc. in September 1979.

In 1979 shipments of finished portland cement totaling 1,888,594 tons were valued at $79.6 million, a decrease of 10.6 percent in quantity and 0.8 percent in value from the 1978 level, while in 1980 shipments totaled 1,648,674 tons, valued at $75.3 million, a 12.7 percent decrease in production and a 5.4 percent decrease in value (table 30). In 1979 the quantity of prepared masonry cement shipments decreased by 17.9 percent, and value by 6.4 percent from 1978. In 1980 shipments decreased by 79.8 percent while value decreased 82.5 percent from 1979.

Raw materials used in the manufacture of cement include cement rock (an argillaceous limestone containing lime, silica, alumina, and magnesia), limestone, clay, shale, sand, fly ash, slag, and gypsum. In 1979 Illinois produced 3,279,867 tons, and in 1980, 2,596,591 tons, of crushed limestone for use in manufacturing cement (table 28) and consumed 3,360,772 tons in 1979 and 2,685,915 tons in 1980.

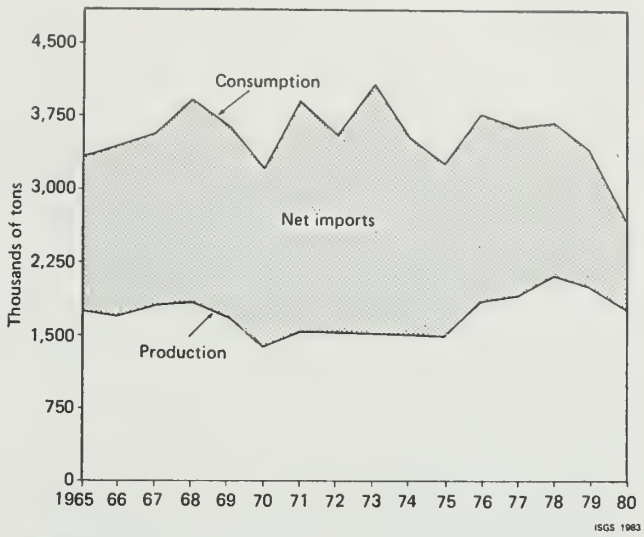

Figure 13. Production and consumption of finished portland cement in Illinois, 1965-1980

Bulk shipments of cement from Illinois plants to customers were made by truck (95.2 percent in 1979 and 93.7 percent in 1980), rail, and barge. Container shipments of cement were made by truck and rail only, with over 90 percent of the shipments moved by truck in 1979 and a little over 50 percent by truck in 1980.

Consumption. A total of 3.4 million tons of portland cement was consumed in Illinois in 1979 (288,000 tons less than in 1978) and 2.7 million tons were consumed in 1980 (714,000 tons less than in 1979) (fig. 13). Consumption of masonry cement in Illinois was 133,000 tons in 1979, as compared with 142,000 tons in 1978 and further declined in 1980 to 90,000 tons, a 36.6 percent drop in consumption in 2 years.

TABLE 30. Production and value of finished portland cement manufactured in Illinois, 1978-1980

	1978	1979	1980	Percentage of change from 1978 to 1979	Percentage of change from 1979 to 1980
Number of active plants	4.	4.	4.	--	--
Production (tons)	2,122,587.00	1,998,317.00	1,767,582.00	- 5.85	- 11.55
Shipment from mills					
Quantity (tons)	2,112,477.00	1,888,594.00	1,648,674.00	- 10.60	- 12.70
Value	80,242,233.00	79,603,714.00	75,315,222.00	- 0.80	- 5.39
Average value per ton	37.99	42.15	45.68	+ 10.95	+ 8.37
Stocks at mills, Dec. 31 (tons)	126,000.00	228,000.00	255,000.00	+ 80.95	+ 11.84

Clay products

To obtain accurate, current information about the amount and value of clay products manufactured in Illinois, the Illinois State Geological Survey sends questionnaires every year to all producers in the state. More plants closed in 1979 and 1980 and a few did not respond to our questionnaire; however, the total value of clay products increased 2.6 percent from $59.9 million in 1979 to $65.6 million in 1980; whiteware and pottery, $25.6 million in 1979 and $32.4 million in 1980; structural clay products such as common and face brick, drain tile, and sewer pipes, $19.7 million in 1979 and $14.6 million in 1980; and refractories and other products, $14.6 million in 1979 and $18.7 million in 1980. Of the companies responding to the questionnaire, eight in 1979 and only six in 1980 reported clay mining operations. According to the U.S. Department of Commerce, in 1979 Illinois produced 106.1 million bricks (building-common and face) and shipped 93.4 million bricks with a value of $10.7 million; however, because of the decline in construction, in 1980 only 68.8 million bricks were produced, and 63.1 million shipped with a value of $7.8 million.

Coke

Production. In 1979 Illinois produced 1,364,000 tons of coke and recovered 168,000 tons of coke breeze, and in 1980 produced 1,155,000 tons of coke and recovered 95,000 tons of coke breeze from four oven coke operations—three in Cook County and one in Madison County. Production of coke was down 15.3 percent and production of breeze was down 43.5 percent from 1979 (table 31). Most of the coke produced in 1980 was used in blast furnaces by the producing companies, and some coke was sold from stocks. Illinois also recovered by-products, including coke-oven gas tar, crude light oil, and ammonia in addition to coke breeze (table 32).

The coal used for the manufacture of coke in Illinois in 1979 and 1980 came from Illinois and five other states:

	1979 (%)	1980 (%)
Illinois	19.6	26.5
Kentucky	44.6	17.9
West Virginia	25.8	37.6
Pennsylvania	4.5	0.7
Virginia	2.5	7.2
Oklahoma	0.5	3.1
From stock	2.5	7.0

According to the U.S. Bureau of mines Illinois coal used for coking purposes was shipped only from mines in Jefferson, Franklin, and Saline Counties.

Consumption and uses. In 1980 Illinois consumed 2,657,000 tons of coke and 346,000 tons of coke breeze (table 31), a 30.0 percent decrease in coke consumption from the 1979 total of 3,797,000 tons and a 2.3 percent decrease in breeze consumption from the 1979 level of 354,000 tons. Coke is used for production of pig iron, for foundry and other industrial purposes, and for residential heating. Coke breeze was used for fuel in steam plants, in agglomerating plants, and elsewhere.

Glass

Glass and/or fiberglass was manufactured by companies in Du Page, Lake, La Salle, Logan, McLean, Macon, Madison, Marion, Montgomery, St. Clair, and Will Counties. Production data are not available.

Lime

Production. Production and value of lime decreased in 1979 by 10.6 and 0.9 percent, respectively, and in 1980 by 13.5 and 6.3 percent. Both quicklime and hydrated lime were produced by Marblehead Lime Company, a division of General Dynamics, at two plants (South Chicago and Thornton); Vulcan Materials Company (McCook) produced quicklime. All three plants are in Cook County.

Marblehead continued its position as the largest United States producer, and in 1980 completed construction of the largest lime kiln in the world (a 600,000 short-ton-per-year rotary kiln) at its South Chicago plant. The Thornton plant will expand its present capacity by 250,000 tons per year with a new kiln and auxiliary equipment.

Consumption and uses. A total of 1,068,000 tons of lime was consumed in Illinois in 1979 (7.9 percent less than in 1978) and 893,000 tons in 1980 (16.4 percent less than 1979) (fig. 14). Illinois was one of the leading hydrate-consuming states in 1979 and 1980, consuming more than 100,000 tons.

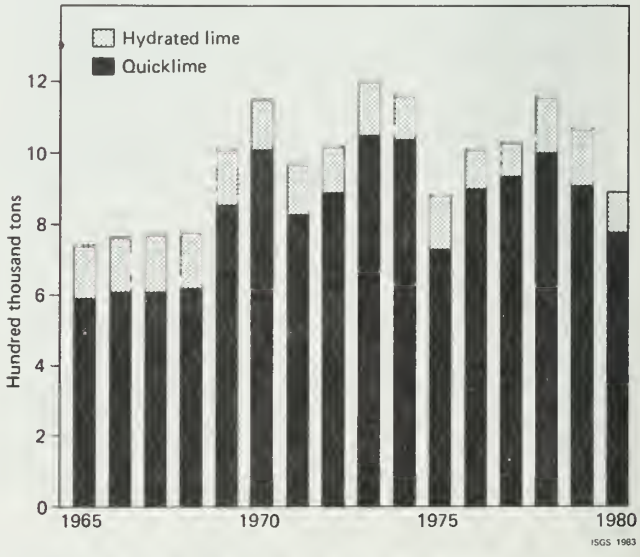

Figure 14. Trends in consumption of quicklime and hydrated lime, 1965-1980

TABLE 31. Production and consumption of coke in Illinois, by use, 1973-1980

Year	Coke production	Coke uses (1000 tons) Blast furnace	Foundry	Other industrial plants	Residential heating	Total coke consumption[a]	Breeze production	Total breeze consumption
1975	1,924	2,954	148	19	—[b]	3,122	251	334
1976	1,706	3,356	174	7	—[b]	3,537	270	319
1977	1,591	3,496	177	30	—[b]	3,703	762	216
1978	1,431	4,152	151	42	—[b]	4,345	189	266
1979	1,364	3,636	139	21	—[b]	3,797	168	354
1980	1,155	2,551	89	17	—[b]	2,657	95	346

[a] Data may not add to totals shown because of independent rounding.
[b] Included with "Other industrial plants."

Source: U.S. Bureau of Mines.

TABLE 32. Quantity and value of coke and by-products produced, sold, or used by producer in Illinois, 1979 and 1980

Coke and by-products	Unit	1979 Quantity	1979 Value at plant Total ($1000)	1979 Value at plant Average ($ per ton)	1980 Quantity	1980 Value at plant Total ($1000)	1980 Value at plant Average ($ per ton)
Plants in operation		4			4		
Coal, carbonized	thousand tons	2,210	108,207	48.96	1,811	93,708	51.75
Coal per ton of coke	tons	1.62	--	NA	1.57	--	NA
Coke produced	thousand tons	1,364	W	W	1,155	W	W
Coke yield, percent of coal carbonized	percent	61.72			63.77		
Source of coal carbonized							
Illinois	thousand tons	434	--	--	479	--	--
Kentucky	thousand tons	986	--	--	325	--	--
West Virginia	thousand tons	569	--	--	681	--	--
Pennsylvania	thousand tons	100	--	--	13	--	--
Virginia	thousand tons	55	--	--	130	--	--
Oklahoma	thousand tons	10	--	--	56	--	--
Total	thousand tons	2,154	--	--	1,684	--	--
From stock or to stock	thousand tons	+ 56	--	--	+ 127	--	--
Coke sold or used by producer							
Blast furnace	thousand tons	2,241	246,693	--	1,676	180,247	--
Other purposes	thousand tons	W	W	--	W	W	W
Total used	thousand tons	W	W	--	W	W	W
Commercial sales							
Blast furnaces	thousand tons	W	W	W	W	W	W
Other industrial plants	thousand tons	--	--	--	--	--	--
Residential	thousand tons	--	--	--	--	--	--
Coke oven by-products							
Ammonia produced (sulfate equivalent)	thousand tons	8	--	--	7	--	--
Per ton of coal cokes	lb	NA	--	--	NA	--	--
Sulfate equivalent sold	thousand tons	9	429	--	7	347	--
Coke oven gas produced	million cu ft	21,211	--	--	16,400	--	--
Per ton of coal	thousand cu ft	9.60	--	--	9.06	--	--
Used in heating coke ovens	million cu ft	10,312	--	--	7,305	--	--
Surplus used or sold	million cu ft	9,517	12,261	1.288/Mcf	7,177	11,842	1.650/Mcf
Wasted	million cu ft	W	--	--	1,362	--	--
Light oil and derivstives sold	thousand gal	5,332	3,923	--	4,071	4,226	--
Tar produced	thousand gal	13,852	--	--	11,854	--	--
Per ton of coal coked	gal	6.27	--	--	6.55	--	--
Used by producers	thousand gal	0	--	--	0	--	--
Sold for refining	thousand gal	14,002	5,914	0.422/gal	12,312	6,583	0.535/gal
Total by-products sold or used			22,527			22,997	

W = withheld to avoid disclosure of data from individual companies.
NA = not available.

Source: U.S. Bureau of Mines.

TABLE 33. Mineral production data for 1980 and preliminary data for 1981

Commodity	Unit	1980 Quantity	1980 Value ($1000)	1981 Quantity	1981 Value ($1000)	Percentage of change from 1980 to 1981 Quantity	Percentage of change from 1980 to 1981 Value
			MINERAL MATERIALS MINED				
FUELS							
Coal	thousand tons	62,542	$1,626,103*	52,100	$1,406,700	- 16.7	- 13.5
Crude oil	thousand bbl	22,702	817,265*	24,200	822,800	+ 6.6	+ 0.7
Natural gas	thousand Mcf	1,574	2,928*	1,310	3,210	- 16.8	+ 7.3
Natural gas liquids	million bbl	NA	NA	NA	NA		
TOTAL[a]			2,446,296		2,232,710		- 8.7
INDUSTRIAL AND CONSTRUCTION MATERIALS							
Clays - Common	thousand tons	459	1,919	440	2,350	- 4.1	+ 22.5
Refractory	thousand tons	b	b	b	b		
Absorbent	thousand tons	W	W	W	W	+ 9.1	+ 17.6
Fluorspar (shipments)	tons	W	W	W	W	+ 24.1	+ 50.7
Sand and gravel							
Common	thousand tons	27,094	78,510				
Industrial	thousand tons	4,631	43,822	28,800	123,300	- 9.2	+ 0.8
Stone (limestone & dolomite)							
Crushed and broken	thousand tons	53,309	180,656	45,300	154,000	- 15.0	- 14.8
Dimension	tons	2,238	103	2,380	110	+ 6.3	+ 6.8
Tripoli	thousand tons	W	W	W	W	- 19.5	- 18.9
TOTAL[a]			305,010		279,760		- 8.3
METALS							
Lead	metric tons	W	W	W	W	+ 73.9	+ 86.0
Zinc	metric tons	W	W	W	W	+ 50.4	+ 82.3
Silver	troy ounces	W	W	W	W	+100.0	+ 8.0
Germanium		NA	NA	NA	NA		
TOTAL[a]		W	W	W	W		
OTHERS							
Peat	thousand tons	79	1,505	79	1,669	—	+ 10.9
Gem stones		NA	15	NA	15	—	—
Barite, primary	thousand tons	W	W	W	W	+ 33.3	+ 27.7
Total[a]			1,505		1,684		- 11.9
Values that cannot be disclosed (W)			22,283		31,422		+ 41.0
Total value of mineral materials mined[a]			$2,775,109		2,545,576		- 8.3

[a] Data may not add to totals shown because of independent rounding.
[b] Refractory clay is included with common clay to avoid disclosing confidential data from individual companies.
NA = not available.
W = withheld to avoid disclosing confidential data from individual companies.

Source: U.S. Bureau of Mines, Illinois Department of Mines and Minerals, Illinois State Geological Survey.

PRELIMINARY PRODUCTION DATA: 1981

According to the U.S. Bureau of Mines figures for nonfuels, preliminary figures for 1981 show that Illinois continued to be one of the nation's leading producers of fluorspar, fuller's earth, lime, peat, sand and gravel, stone, and tripoli. Coal continued to be the leading mineral commodity in 1981, valued at $1,406.7 million, or 55.3 percent of the total value of mineral materials mined ($2,545.6 million).

MINERAL MATERIALS MINED

In 1981 preliminary production data for Illinois indicate that the total value of materials mined reached $2,545.6 million—a 8.3 percent decrease from the 1980 level of $2,775.2 million (table 33). This decrease occurred for several reasons: the quantity of coal produced declined 16.7 percent due to a strike; therefore, even though the price per ton of coal increased, the value was down 13.5 percent; oil prices were lower; and the depressed state of the construction industries caused less sand and gravel and stone to be produced.

FUELS

Coal, crude oil, and natural gas, the mineral fuels produced during 1981, were valued at $2,232.7 million. Of this amount, 63.0 percent came from coal, 36.9 percent from crude oil, and the remaining 0.1 percent from natural gas. In 1979, the value of mineral fuels produced totaled $1,869.4 million and $2,446.4 million in 1980—an 8.7 percent decrease from 1980 to 1981 level.

Coal

Illinois coal production decreased to 52.1 million tons in 1981 from 62.5 million tons in 1980. The production was down 16.7 percent due to a 72-day United Mine Workers strike, which began the last part of March and ended the first part of June. The longest strike in history, three years ago, lasted 110 days. The value of coal per ton increased 3.8 percent from 1980 (from an estimated $26.00 to $27.00); however, total value of coal was down 13.5 percent.

For the first time, high-sulfur Illinois coal is being sold under contract to a European buyer. The coal will come from the Freeman-United Orient #3 mine in Waltonville, Illinois.

Old Ben Coal Company announced the reopening of its No. 24 underground mine at Benton with a new coal preparation plant and two new longwall mining operations. Full production is planned for the first quarter of 1983.

The various consuming sectors and the states to which Illinois coal was shipped in the first nine months of 1980 and 1981 are shown in tables 34 and 35.

Crude oil and natural gas

In 1981 production increased an estimated 6.6 percent from 22.7 million barrels in 1980 to 24.2 million barrels in 1981. The total estimated value of the 1981 production was $822.8 million, an estimated $34.00 per barrel, down 5.9 percent from the estimated $36.00 per barrel in 1980.

Natural gas production decreased 16.8 percent with the value increasing 7.3 percent. The unit value increased from $1.90/Mcf in 1980 to $2.45/Mcf in 1981.

TABLE 34. Coal shipments from Illinois to consuming sectors in the United States, 1980 and 1981 (1000 unit tons)

Consuming Sector	Jan.-Sept. 1980	Jan.-Sept. 1981	Percentage of change
Electric utilities	40,639	29,538	-27.3
Coke and gas plants	2,049	1,612	-21.3
Retail dealers	124	159	+28.2
All others	4,427	3,527	-20.3
Transportation	*	-	-
Used at mine	5	-	-
Mine stock (adjusted)	-	-	-
Foreign	*	589	-
Total	47,246	35,425	-25.0

* Less than 500 tons.

Source: U.S. Bureau of Mines Bituminous Coal and Lignite Distribution, January-September, 1980, 1981.

TABLE 35. Coal shipments from Illinois to consuming states, 1980 and 1981 (1000 unit tons)

Consuming state	Jan.-Sept. 1980	Jan.-Sept. 1981	Percentage of change
Illinois	16,299	11,825	-27.4
Missouri	10,833	8,720	-19.5
Indiana	7,719	5,052	-34.6
Wisconsin	2,633	1,852	-29.7
Georgia	1,770	1,723	- 2.7
Florida	1,557	1,630	+ 4.7
Iowa	2,145	1,425	+33.6
Alabama	1,793	1,155	-35.6
Minnesota	680	459	-32.5
Michigan	632	233	-63.1
Other states[a]	1,185	762	-35.7
Exports	*[b]	589	
TOTAL	47,246	35,425	-25.0

[a] Includes coal used at mines and net change in mine inventory and Pennsylvania, Kansas, Kentucky, Mississippi, Tennessee, Louisiana, Texas, California (1980, 1981), New Jersey (1980), New Hampshire, New York, Ohio (1981).

[b] Less than 500 tons.

Source: U.S. Bureau of Mines Bituminous Coal and Lignite Distribution, January-September, 1980, 1981.

INDUSTRIAL AND CONSTRUCTION MATERIALS

Preliminary data for 1981 show industrial and construction materials decreased by 5.5 percent from the 1980 level. Values of fluorspar, clays, and sand and gravel increased, while stone and tripoli decreased by 14.7 and 18.9 percent, respectively. Stone and sand and gravel continued to contribute the greatest amount of value to the state's nonfuel mineral production. Sand and gravel production decreased 9.2 percent from 1980, clay production decreased 4.1 percent and fluorspar increased in production by 24.1 percent.

METALS AND OTHER MINERALS

Lead, zinc, barite, and small amounts of silver were recovered as by-products of Illinois fluorspar production in 1981. The total value of metals mined was 81.7 percent more than the 1980 value; the value of barite increased 27.7 percent from the 1980 level.

A newly enlarged precious metals smelting facility was started up at Franklin Park by United Refining and Smelting Company, a subsidiary of Diversified Industries, Inc. The plant can produce 50,000 pounds per day of gold, silver, and other precious metals from industrial scrap.

In 1981 Illinois peat production remained stable at 79,000 tons, which represented a value of $1,669,000 (up 10.9 percent from the 1980 value of $1,505,000). The fluorspar gemstone mined in southern Illinois contributed approximately $15,000 to the total value of mineral materials mined.

MINERAL MATERIALS PROCESSED

Preliminary data are not yet available for most of the mineral materials processed in Illinois in 1981. We do know that according to the American Iron and Steel Institute, Illinois raw steel production increased from 9,034,206 tons to 9,175,751 tons, a 1.6 percent increase. Declining sales during the last quarter of 1980 forced cutbacks in production and personnel layoffs. Early in the year, the Wisconsin Steel Works in Chicago was taken over by the U.S. Economic Development Administration.

MINERAL PRODUCTS MANUFACTURED

Preliminary figures for portland cement in 1981 show that 1.4 million tons were manufactured—a 10.3 percent decrease from the 1.5 million in 1980. The 1981 value was $71.6 million—a 4.9 percent decrease from the $75.3 million in 1980. Masonry cement increased 28.6 percent in quantity and 38.4 percent in value. Lime increased 27.4 percent in quantity and 32.5 percent in value.

In June, Medusa Cement Company leased a ten-acre site from the Port of Chicago for construction of a $6 million cement distribution terminal, which is expected to be completed in early 1982.